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ABSTRACT

This study examined the relationship between graduate medical education (GME) and practice profiles in three specialties: family practice, psychiatry, and obstetrics/gynecology. Two analyses were performed, the first assessing the relationship between GME and current practice patterns and the second assessing the relationship between GME and predicted practice patterns. In formulating an adjusted needs-based model, four dimensions were found to be central to characterizing the practice profile (and the subsequent manpower requirements) of a specialty: (1) the diagnostic and procedural content of the specialty; (2) the ambulatory versus inpatient setting of care; (3) productivity and the proportion of professional time spent in non-patient care activity; and (4) the delegation of visits to non-physician providers. Each of these dimensions was used as a basis for comparing GME with current and 1990 normative practice patterns in each of the three specialties. Among the conclusions reported are those indicating that profiles of residents and practicing physicians in all three specialties (with few exceptions) were markedly similar (suggesting that residents basically appear to do the same kinds of things in training that they will do in subsequent practice) and that, although a high degree of correspondence between training and subsequent practice is desirable, absolute correspondence is not. (JN)

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LINKAGE BETWEEN GRADUATE MEDICAL EDUCATION TRAINING PRACTICE PROFILES IN PSYCHIATRY, OBSTETRICS/GYNECOLOGY, AND FAMILY PRACTICE

DELIVERABLE NO. 5

FINAL REPORT

August 26, 1983

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DELIVERABLE NO. 5

FINAL REPORT

August 26, 1983

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GME = Graduate Medical Education
CP = Current Practice
NP = Normative Practice

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We are also grateful for the assistance of our consultants in each of the three specialty areas. This assistance applied to the technical and factual information in this report and does not necessarily imply endorsement of the conclusions of the study.

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CHAPTER 1

BACKGROUND AND PURPOSE OF THE STUDY

Of central importance in the optimum planning and allocation of health resources is ensuring an adequate supply of physicians, both in terms of absolute numbers and distribution by geographic location and specialty. The role of graduate medical education in meeting these needs is widely recognized. Through its effects on specialty and practice choices, graduate training may ameliorate or exacerbate existing distribution problems. In attempting to assess the adequacy of the physician supply in relation to the nation's health care needs, most interest has focused on the specialty distribution of physicians. This concern culminated in the formation of the Graduate Medical Education National Advisory Committee (GMENAC) whose mission was the development of a normative model for projecting health care needs and physician supply by specialty for the year 1990.

The optimum distribution of physicians by specialty is not the only issue of concern with respect to graduate medical education. Of equal importance is an examination of training within a specialty in relationship to the health care requirements of the population. As with other types of dislocations, training which does not address all the demands of subsequent practice decreases the efficiency of the health care system. In the quest for the most efficient and balanced medical training, two questions may be raised. First, are residency training programs preparing physicians adequately for the situations they will encounter in subsequent practice? Second, since existing practice patterns may not represent the optimum and most efficient use of health care resources and/or may not incorporate changes in health care patterns that can be expected in the future, are residency programs preparing physicians adequately to practice in what may be a rapidly changing delivery system?

As an extension of the work initiated by GMENAC, the Office of Graduate Medical Education (OGME) of the Health Resources Administration (HRA) contracted with SysteMetrics, Inc. to examine the relationship between graduate medical education and practice profiles in three specialties: Family Practice, Psychiatry, and Obstetrics/Gynecology. Two analyses were performed; the first assessing the relationship between graduate medical education (GME) and current practice patterns and the second, that between GME and predicted practice patterns. In the analysis, the latter was represented by the practice profiles projected for the year 1990 by the GMENAC model.

In formulating the adjusted needs-based model, the work of GMENAC showed that four dimensions were central in characterizing the practice profile (and the subsequent manpower requirements) of a specialty:

1. the diagnostic and procedural content of the specialty
2. the ambulatory versus inpatient setting of care
3. productivity and the proportion of professional time spent in non-patient care activity
4. the delegation of visits to nonphysician providers

The present study, therefore, used these dimensions as a basis for comparing graduate medical education with current and 1990 normative practice patterns.

At present, there are a number of existing data sources with relevant information on training and practice in each of these areas. Except in rare instances, however, these data have not been brought together to provide an overall picture of the relationship between GME and practice in each of the specialty areas. In the present study SysteMetrics was charged with identifying, selecting, and obtaining existing data in these areas; with compiling and formatting these data, and with assessing the relationship between training and practice along each of the four dimensions.

As will be discussed in the following section, three data sources provided the majority of the information for the analysis: The USC Practice Profile Study for assessing current practice; the questionnaires submitted by residency programs to the Accreditation Council for Graduate Medical Education (ACGME) for

assessing residency training; and the projections made by the GMENAC adjusted needs-based model for 1990 normative data. Once obtained, statistics for measuring the diagnostic and procedural focus, the ambulatory versus inpatient setting of care, the teaching, research and administrative component of practice, and the use of nonphysician providers were developed. Using these data sources, the study developed indices which enabled comparisons to be made between residency training, current practice, and 1990 normative practice. The use of existing data was felt to provide an inexpensive means of examining training and practice in the three specialties of interest. As with any study using data collected for other purposes, there were a number of methodological challenges involved in applying the data to the present research questions. These issues and our approach to their resolution will be discussed in Chapter 2, Study Methods.

Following the compilation of statistics describing the diagnostic and procedural focus, ambulatory emphasis, nonpatient care activities, and use of nonphysician providers in the three specialties, the next step was the comparison of these measures across training, current practice, and 1990 normative practice. This analysis -- although relying on the presentation of quantifiable indicators of training and practice -- was primarily qualitative in nature. The fact that diagnostic and procedural focus, ambulatory versus inpatient emphasis, and so forth are expressed in terms of percentages of total experience does not mean that the assessment of graduate medical education in relationship to subsequent practice demands can be performed by a mere comparison of numbers. For example, adequate treatment of uncomplicated conditions which occur frequently in practice may not require a similarly high level of experience during residency training. Infrequently occurring, but more complicated conditions, on the other hand, require greater exposure during training than in subsequent practice. By presenting two sets of numbers side by side in the following pages we do not wish to imply that any difference in the practice profiles of residents automatically indicates an imbalance between GME and practice, or conversely, that similarity in profiles is always optimum. This is an issue which must be decided subjectively; the numbers themselves have been calculated and presented only to provide data to guide this subjective process.

Because of the qualitative nature of the study, a major component of the analysis was the convening of an expert panel to review the findings of the study and suggest possible interpretations. This panel -- composed of representatives from the American Academy of Family Physicians, the American Psychiatric Association, the American College of Obstetricians and Gynecologists, the American Medical Association, the Association of American Medical Colleges, the American Hospital Association, the Council of Medical Specialty Societies and the American Board of Medical Specialties -- examined the results, discussing the implications for graduate medical education, as well as identifying competing explanations arising from the data. The findings and the inferences to be made from them are presented on the subsequent pages, following a discussion of the methodology of the study.

CHAPTER 2

STUDY METHODS

In order to examine the relationship between residency training and physician practice in an efficient and timely manner, the data collection effort in the current study restricted itself to the use of secondary data sources. As with the resident follow-up study to the National Study of Internal Medicine (Tarlov, et al, 1979) currently being conducted at the University of Chicago, one approach to this subject is to follow physicians first through residency training and then through subsequent practice, comparing their experiences in each phase along the same dimensions with the same measures. The costs of such extensive sampling and data collection efforts, however, are prohibitively high and it may take many years to obtain and analyze the data. As a less costly alternative, this study chose to obtain, and analyze data from existing sources, and to concentrate on cross-sectional rather than longitudinal comparisons of training and practice. This approach was felt to provide an efficient preliminary examination of training and practice to identify relationships that might subsequently be explored in more focused studies.

With such a data collection focus, the choice of secondary data sources became a determining factor for the validity of the study. An important activity in the early phases of the study involved the identification of surveys and documentation of residency training and physician practice characteristics that were related to the issues of current interest. These efforts were guided by four criteria. First, to be useful for the comparative analyses in this study, the data needed to be quantifiable (e.g., in terms of percentages or means). Second, for the analyses to be fully generalizable, the data needed to represent a national, rather than regional, population of residents and physicians. Third, the data needed to address the training dimensions of central interest to the study. Fourth, the data had to meet reasonable standards of reliability and validity.

A large number of studies and data bases were examined as part of this effort. Most consisted of non-quantitative descriptions of training or practice characteristics in specific programs or settings. Several major follow-up studies of residents such as the Washington (Geyman, et al 1980), the Virginia (Marsland, Wood, and Mayo, 1976), and the Minnesota (Ciriacy, et al, 1980) studies in Family Practice, and the UCLA study (Yager, Pasnau, Lipschultz, 1979) in Psychiatry were found to address a number of important issues relating to residency training but represented resident and physician populations that were too narrow to be included in the present analyses (although the findings were found to be useful for clarifying the results of this study). In addition to these kinds of independent research studies, other potential data sources that were examined included the American Board of Medical Specialties, the Association of American Medical Colleges, the National Residency Matching Program, and the specialty boards in the three specialties of focus. The data maintained by these organizations was of a very specific nature, however, and did not cover the topics and/or populations of interest in the present study.

Other national studies of practice patterns in a specialty did not have the level of detail (particularly with respect to the diagnostic and procedural focus of the specialty) but provided information relevant to the other dimensions of practice. The most useful set of studies in this respect were those performed by the American Academy of Family Physicians (AAFP) and consisted of a survey of all former residents of Family Practice residency programs (published in Black, Schmittling, and Stern, 1980) and surveys of the office-based practices and hospital practices of active office-based members of the AAFP. Another survey of all former residents of FP programs concerned with the diagnostic and procedural focus of practice and training was conducted by the AAFP in the summer of 1982, but was not available for use by this project.

With respect to current practice, the data base most relevant to the concerns of the present study was found to be the USC Practice Profiles Study, which surveyed the professional activities and patient care characteristics of over 10,000 physicians in twenty-four medical and surgical specialties in the United States during the years 1976-1978. The data base contains fairly exhaustive quantitative information describing various aspects of current practice. The physician sample was representative of the entire physician

population and the data elements included in the survey addressed the four training dimensions of interest to this study. The USC data files are publicly available and were acquired for use in this study.

The most viable source of data on graduate medical education was found to be that maintained by the Accreditation Council on Graduate Medical Education (ACGME) which, as part of an accreditation process, sends out comprehensive questionnaires to all residency training programs on a four-to-five year cycle. Although the ACGME data is at the program, not resident, level the large amount of quantifiable information on residents' experiences and curriculum was considered very useful for the purposes of this study. (The ACGME data base and the steps taken for its procurement are discussed in more detail in Appendix A-1.) In addition to the ACGME data, another source of data on residency training came from specialty-specific organizations. The data maintained and published by the American Academy of Family Practice (AAFP) in its 1982 Directory of Family Practice Residency Programs includes such information as the size of programs and the types of curriculum areas included in the program and was therefore obtained to supplement the ACGME data on Family Practice. In Psychiatry, data on residency programs were also obtained by the American Association of Directors of Psychiatry Residency Training (AADPRT) as part of an annual survey of program directors. These data cover criteria used in the selection of residents, the theoretical orientation of the department (e.g., psychoanalytic, biological), and areas stressed in the curriculum. The AADPRT data was found to be useful for qualifying the results of the analyses. In general, however, no specialty organization was found to maintain comprehensive data on residency programs.

In addition to these sources of data on GME, the USC Practice Profiles study sampled a small group of residents (excluding first year residents) in all three specialties. This sample provided resident-level data calibrated in terms of the same variables used to describe current practice. Because of this, the sample, though small, was a particularly useful supplement to the analysis, providing a cross check on the findings based on other data sources.

The major source of information on 1990 physician practice characteristics is, of course, the projections made by the Graduate Medical Education National Advisory Committee (GMENAC). The GMENAC adjusted needs-based model provided estimates of the service and productivity requirements for physicians in each specialty in 1990. The data published by GMENAC in its various reports are quantifiable, bear directly on the training issues of interest, and therefore were directly useful for the comparisons of training, current practice, and future practice made in this study. The GMENAC reports and supporting documents provided by the OGME/HRA were, therefore, the sole source of information on 1990 physician practice requirements used in this study.

As noted, the tailoring of secondary data to a specific research question involves a number of methodological considerations. In both the design of the study and its evaluation by consultants, panel members, and reviewing organizations a number of technical issues were of concern. These issues and our approach to their resolution are discussed below. A detailed discussion of the entire study methodology is given in Appendix A.

A. HETEROGENEITY AND THE USE OF A CROSS-SECTIONAL VERSUS LONGITUDINAL DESIGN

A longitudinal design, such as that employed by the University of Chicago's NASIMM follow-up study, permits the linking of training and practice data on an individual-by-individual basis. The present study employed a cross-sectional design, comparing aggregate data on training as a whole with aggregate data on practice as a whole. The primary consequence of this design is that -- if a great deal of heterogeneity exists in a specialty area -- there may be divergency between the training and practice experiences of single individuals, yet the training and practice profiles of the specialty may appear similar. (Lack of similarity in profiles, however, necessarily reflects an overall difference in the training and practice experience of at least a portion of the physicians making up the specialty.) Recognition of this factor is explicitly made in the discussion of study results in the following chapter, particularly where heterogeneity of training and practice styles was apparent in the data. Panelists were particularly helpful in indicating areas where heterogeneity creates special problems in the adequate preparation of physicians for subsequent practice demands, and these are also noted in the discussion of results.

B. TEMPORAL RELATIONSHIP OF THE GME AND CURRENT PRACTICE DATA

Since the present study is a cross-sectional one and uses different data bases for each population represented in the analysis, the years covered by each data set must be taken into consideration. These can affect the conclusions drawn in two ways: first, the data may not reflect very recent changes which have occurred for either residents or practicing physicians and, second, data on residents may cover a different period than that on practicing physicians. In the present study, the USC survey was performed in 1977 for Family Practice, 1978 for Psychiatry, and 1976 for OB/GYN. When comparing the residents in the USC survey with currently practicing physicians, both are represented at the same point in time, and so can accurately reflect the relation between GME and current practice at that time. Conclusions on this relationship are, however, dated by from four to six years.

In addition, the ACGME data, which are filled out an average of every five years by program directors, represent data from 1978 to 1982. They, therefore, reflect a somewhat more current picture of GME than that evident from the USC resident sample. Rapid changes which have occurred in either GME or practice patterns over the past half decade can thus change the conclusions drawn from the present data. Once again, the study relied on the panelists to point out such areas and these are indicated in the discussions of results.

C. LEVELS OF ANALYSIS

The data used to describe current practice were collected at the physician-level. Most of the data for studying residency training, on the other hand, were at the program rather than resident level. As a result an average taken across programs fails to reflect average resident experience since programs with large numbers of residents receive the same weight in the calculation as small programs. To correct this bias, program-level data were weighted by the number of residents in the program to produce aggregate statistics which appropriately described the average experiences received by residents. The sampling and weighting procedures used in performing this operation are described in more detail in Appendix A-1.

D. SAMPLE SIZE AND SAMPLE REPRESENTATIVENESS

As noted, one of the major criteria in selecting the data bases for the study was that the data be representative of a national population of residents and physicians. The analyses, therefore, made extensive use of a small, but nationally representative sample of residents (n=71 for Family Practice, 52 for Psychiatry, and 79 for OB/GYN) that were included in the USC Practice Profile Study. Meanwhile, larger follow-up samples of residents such as that in the Washington (n=119), Virginia (n=132), and Minnesota (n=161) studies in Family Practice were excluded from consideration because they did not constitute a national sample.

The question arose as to whether samples of 52 to 79 persons are sufficient to represent a national sample. Given that a sample is drawn by a probability process (as were each of the USC specialty samples), statistics based on the sample are estimates of true population values, regardless of sample size. Sample size affects not the validity of the estimate, but only its precision. Estimates based on smaller samples will have higher standard errors than estimates based on large samples. Standard errors can be calculated for each statistic to determine whether the desired conclusions can safely be drawn from the data. It is the standard errors (and the tests of significance employing them) which determines whether the sample can be used to make certain statements about the population, not the sample size per se. In this study, we found that standard errors using the USC resident sample were sufficiently small in many cases to draw a number of relevant conclusions about the total resident population.

E. SUBSTANTIVELY INTERESTING VERSUS SIGNIFICANT DIFFERENCES

As described above, the calculation of standard errors and testing of significance is central to assessing the meaningfulness of results. It is common lore in statistical theory, however, that very small differences between two groups (e.g., between residents and practicing physicians) may be significant (if sample size is sufficiently large) but may not be of any

real-world importance. Since the calculation of standard errors is computationally complex and, therefore, expensive, we chose in this study to test the significance only of differences we considered large enough to be substantively interesting. The results of all such tests -- whether significant or nonsignificant -- are presented in the tables displayed in the results section. If no notation is made, then, the particular comparison was not statistically tested.

The significance of all large differences between residents and practicing physicians was tested. There may be a number of small differences in these tables that are also significant. These were not assessed, however, because they were considered of little interest regardless of their significance level.

F. COVERAGE OF THE POPULATION

While a small sample is often sufficient to represent a large population, another area of concern is whether the population covered is the most appropriate one. This was particularly an issue with respect to the USC Practice Profile data. Physicians were included in the USC sample according to the self-designated specialty so that not all physicians in the sample actually received residency training in the designated specialty. In addition, as described in Appendix A-2, the USC survey does not provide a reliable way of distinguishing between physicans who received training in the specialty and those who did not.

There is the possibility, therefore, that a difference between GME and current practice profiles reflects the practice patterns of physicians who have gravitated to the specialty and so see a different patient population and have a different style of practice than those trained in the specialty. This problem affects all three specialties, but is particularly acute for Family Practice. In a memorandum of March 31, 1983 the American Academy of Family Physicians notes:

> The USC study used the AMA masterfile as the frame for drawing a sample of family physicians. According to the executive summary of the Family Practice Study Report, August 1978, by

Robert C. Mendenhall, M.D., this frame contained 9,180 active, non-federally employed physicians in the United States with a primary indicated specialty of family practice as of November 1975.

The American Academy of Family Physicians has maintained detailed records of the graduates of, and residents in, family practice residency programs since 1970. According to AAFP records in July 1975 there had been only 1,323 graduates of family practice residency programs. Moreover, there were only 2,111 second- and third-year residents in family practice residency programs in July 1975 (it is inappropriate to count first-year residents as they would not be added to the AMA masterfile by November 1975 and the methodology of the Mendenhall study would have excluded first-year residents anyway.) Thus the total number of graduates plus residents who could legitimately be included in the AMA frame (if we assume in the first place that they correctly identified themselves in family practice) is 3,434 --- 5,746 short of the 9,180 claimed by AMA in November 1975.

With a representative sample of 606 physicians this implies that only 37% (i.e., 3,434 divided by 9,180) received training with Family Practice. The American Board of Family Practice (ABFP), however, also provided board certification in Family Practice to practicing physicians meeting rigorous criteria. In the USC study, 57% of the physicians were certified by this board. In all, nearly 80% of the sample indicated they were board certified by the ABFP or were a member of the AAFP.

Numerous tests of the data (described in Appendix A-2) were performed for all three specialties to identify whether these subsets of physicians were different from the sample as a whole. These tests did not demonstrate any significant difference in practice patterns for various subsets of physicians so the entire USC sample was included in the analysis. In interpreting results, however, we were conscious of the possible biasing effect that this might have. Panel members were particularly asked to consider areas in which current practice patterns were influenced by the practices of physicians not trained in the specialty. Areas where this factor may be particularly relevant in interpreting results (e.g., the practice of obstetrics in Family Practice) are noted in the discussion.

G. VALIDITY OF THE ACGME DATA

As described above, a major source of data on residency training derived from the ACGME questionnaires submitted by program directors as part of the accreditation process. Because much of this data is in narrative form, some concern was focused on the validity of the data. To make best use of the data this study established rigorous procedures for data abstraction outlined in Appendix A-1. In addition, the data collection task concentrated on the most quantifiable pieces of information on the form (e.g., percentage of time required of various rotations). A high degree of reliability was established by the study in coding this data.

The validity and reliability of the information on the ACGME forms themselves, of course, remains an open question since no study has ever been performed assessing this issue. As noted, however, the analysis focused on the most objective pieces of information available from the ACGME forms. The quantitative nature of most of these data was felt to make them reasonably immune to measurement and interpretation error.

H. QUALITATIVE VERSUS QUANTITATIVE ANALYSIS

The examination of residency training and practice profiles relied upon the rigorous calculation of the various measures of training and practice activities. As noted in the previous discussion, however, the study relied on the panelists to qualify and interpret results and to indicate areas where possible data biases needed to be taken into account. We considered both aspects of this study design to be equally important. A mere comparison of numbers cannot alone indicate whether training and practice patterns are balanced with respect to each other. This is a subjective issue which requires intimate knowledge of the content and issues of a specialty.

Although (as in any piece of research) the conclusions drawn from the study were based on qualitative interpretation of the data, rigorous quantification was considered to be essential in guiding this process. Although there are a number of competing hypotheses to explain any given result, data do constrain the range of conclusions that may be drawn. The simultaneous use of the

quantitative and qualitative approaches was, therefore, seen to provide the optimum and most cost-effective means of utilizing the numerous existing data sources tc provide meaningful corclusions about the linkage between training and practice profiles.

CHAPTER 3

RESULTS

The following section presents by specialty the results for each of the four training/practice dimensions examined. A brief discussion of the training issues in the specialty is presented first. This is followed by a separate section presenting results for each of the four dimensions under study. This section points out findings of possible substantive interest, attempting as much as possible to reflect the conclusions reached at the October 26/27, 1982 Panel Meeting. In interpreting findings, attention was given to a wide range of possibilities. Possible biases arising from data problems were considered, as well as the variety of forces operating in the training and practice environments of a specialty. Extensive discussion on the calculation of the various indices described below can be found in Appendix A-4.

A. THE RELATIONSHIP BETWEEN GRADUATE MEDICAL EDUCATION AND PRACTICE PROFILES IN FAMILY PRACTICE

With the foundation of the American Board of Family Practice in 1969, Family Practice became one of the most recent medical specialties. Family Practice was established primarily in response to the perceived need for an organized approach to the provision of general primary care to counterbalance the growing trend toward specialization. As such, it requires treatment of a broad spectrum of conditions, and the ability to provide continuous, coordinated and integrated care which takes into account not only the physical disease process but the psychological and environmental factors involved in the promotion of health as well. The Bylaws of the American Academy of Family Physicians (September 21, 1981) define Family Physicians as "...physicians in the discipline of family medicine whose training and experience qualify them to practice in several fields of medicine and surgery, with particular emphasis on the family unit." In particular, as described in the AAFP Policy Manual, the Family Physician provides "...continuing, comprehensive health maintenance and medical care to the entire family regardless of sex, age, or type of problem; be it biological, behavioral or social. This physician serves as the patient's or

family's advocate in all health-related matters, including the appropriate use of consultants and community resources."

Training in Family Practice, therefore, emphasizes preparation in a variety of specialty areas including the behavioral sciences as well as the traditional biological and clinical sciences. The curriculum in Family Practice draws most heavily on internal medicine, pediatrics, obstetrics/gynecology, surgery, and psychiatry. Training in obstetrics should prepare the Family Practitioner for "complete management and delivery of normal pregnancies." Training in surgery should provide the Family Practitioner with the technical proficiency required "for those surgical procedures a Family Physician may be called upon to perform," although additional training should be received if surgery is to be a major aspect of regular practice (Essentials of Accredited Residencies in Family Practice, 1978). Also highly recommended for rotational assignments (see the Family Practice Residency Assistance Program Criteria, 1979) is experience in Ophthalmology, Orthopedics, Otorhinolaryngology, Dermatology, Radiology, Urology, Emergency Medicine and Diseases of the Aged. In order to train residents for their role in the provision of primary care, experience in the provision of continuous, coordinated care in an ambulatory setting is considered essential. This is provided in the Family Practice Center which is a required component of the residency training program.

1. Diagnostic and Procedural Focus in Family Practice

Table 1 presents the distribution of encounters across the major ICDA classes, breaking out some diagnoses to the three-digit ICDA level. The first column presents the distributions for patients greater than 16 years old in ambulatory locations to ensure comparability with the GMENAC projections. The distribution of conditions for all age groups and encounter locations follows in parentheses. Both the USC and GMENAC data represent primary and secondary conditions so that percents will sum to greater than 100%. (Because of the prohibitive costs of calculating the standard errors necessary for tests of significance, these were performed only for differences judged to be of substantive interest. Comparisons for which tests were performed are indicated in the Tables by either "**", for significant at .01 level, "*", for significant at the .05 level, or "ns", for nonsignificant. For any measure without such an indicator no tests of significance were performed. The number of cases

TABLE 1

FAMILY PRACTICE

DIAGNOSTIC AND PROCEDURAL FOCUS:

COMPARISON OF GRADUATE MEDICAL EDUCATION, CURRENT PRACTICE AND 1990 NORMATIVE PRACTICE BASED ON ICDA DIAGNOSTIC CODES

	GRADUATE MEDICAL EDUCATION RESIDENT SAMPLE	1977 PRACTICE PHYSICIAN SAMPLE	1990 NORMATIVE GENERAL ADULT CARE GMENAC
	AMBULATORY ENCOUNTERS, AGE ≥17 YEARS (ALL LOCATIONS, AGES GIVEN IN PARENS) % OF ENCOUNTERS IN WHICH CONDITION OCCURS AS EITHER A PRIMARY OR SECONDARY DIAGNOSIS.		
Infectious and Parasitic Diseases (001-136)	5.1 (5.2)	4.6 (4.9)	4.2
Gonococcal infections (098)	.2 (.1)	.2 (.1)	.1
Diarrheal disease (009)	1.0 (1.6)	1.4 (1.6)	.2
Neoplasm (130-239)	1.1 (1.8)	1.6 (2.4)	1.7
Malignant (140-209)	1.0 (1.6)	1.3 (2.0)	1.3
Endocrine, Nutritional and Metabolic Diseases (240-279)	9.8 (8.0)	9.7 (8.3)	6.4
Diabetes mellitus (250)	1.5 (1.1)	3.0 (1.6)	3.0
Obesity, not of endocrine origin (277)	5.3 (3.6)	3.1 (2.3)	0.2
Mental Disorders	8.5 (5.4)	ns 6.3 (6.1) ns	11.9 a,b
Psychoses (294-296, 298, 299)	.5 (.9)	.5 (.6)	.4
Neuroses (300)	5.2 (2.0)	3.7 (1.6)	3.1
Alcoholism (303)	1.0 (1.2)	.4 (.5)	2.6
Other nonpsychotic mental disorders (301, 304-309)	2.0 (0.8)	1.7 (.8)	5.8
Diseases of the Nervous System and Sense Organs	4.1 (6.3)	5.0 (5.3)	5.2
Diseases of the CNS (320-349)	.8 (.7)	1.7 (1.7)	1.1
Inflammatory diseases of the eye (360-369)	.3 (.4)	.5 (.5)	.4
Otitis media (381, 382)	.8 (.2)	.6 (.1)	0.0
Diseases of the Circulatory System (390-458)	15.2 (14.5)	** 21.5 (20.8) **	16.9 a
Essential benign hypertension (401)	9.0 (6.0)	10.9 (7.8)	5.4
Other hypertension (400, 402-404)	.2 (.1)	.4 (.4)	1.7
Acute myocardial infarction (410)	.2 (.5)	.8 (1.3)	.5
Chronic ischemic heart disease (412)	1.1 (1.6)	4.8 (4.9)	1.3
Symptomatic heart disease (427)	1.8 (2.6)	2.4 (3.2)	1.7
Cerebrovascular disease (430-438)	.6 (2.7)	1.3 (2.6)	1.2
Arteriosclerosis (440)	.1 (.1)	.9 (.9)	.4
Phlebitis and thrombophlebitis (451)	.3 (.5)	.4 (.5)	.5

TABLE 1

FAMILY PRACTICE (CONTD)

	GRADUATE MEDICAL EDUCATION RESIDENT SAMPLE	1977 PRACTICE PHYSICIAN SAMPLE	1990 NORMATIVE GENERAL ADULT CARE
Diseases of the Respiratory System (460-465)	15.7 (17.8)	16.7 (19.3)	12.7
Acute upper respiratory infections (460-465)	7.6 (8.6)	8.1 (9.2)	2.2
Pneumonia (471, 480-486)	1.2 (2.0)	.8 (2.0)	.7
Chronic obstructive pulmonary disease (490-493)	4.1 (4.5)	4.4 (4.8)	4.9
Diseases of the Digestive System (520-577)	4.2 (5.3)	5.7 (7.0)	8.4
Ulcer of the stomach/duodenum (531-533)	.5 (.6)	1.0 (1.0)	2.2
Hernia without obstruction (550, 551)	.3 (.6)	.6 (.7)	.6
Gastroenteritis, acute (535, 561)	.3 (.3)	.9 (.8)	.4
Disorders of function of stomach/intestine (536, 564)	.7 (.6)	.7 (.6)	2.2
Diseases of the Genitourinary System (580-629)	9.8 (8.0)	7.6 (6.5)	5.2
Diseases of urinary system (except nephritis, nephrosis) (590-599)	.3 (2.9)	.3 (2.8)	3.2
Diseases of male genital organs (600-607)	.7 (1.2)	1.0 (1.0)	.4
Diseases of breast, ovary, fallopian tube, parametrium and female genital organs (610-629)	6.2 (4.0)	3.6 (2.7)	1.6
Disorders of menstration (626)	2.0 (1.3)	.8 (.6)	0.0
Complications of Pregnancy, Childbirth and the Puerperium (630-678)	.4 (1.3)	.2 (.7)	1.9
Complications of Pregnancy (630-639)	.2 (.7)	.1 (.1)	.2
Delivery (650-661)	.2 (.8)	0.0 (.4)	NA
Diseases of the Skin and Subcutaneous Tissue (680-709)	5.0 (5.5)	5.1 (4.6)	4.2
Infections of the skin and subcutaneous tissue (680-686)	1.6 (1.8)	1.4 (1.3)	.6
Other inflammatory conditions (690-698)	1.4 (2.0)	1.8 (1.7)	2.2
Diseases of the sebaceous glands (706)	1.2 (1.0)	.7 (.6)	1.0
Disease of the Musculosketal System (710-738)	5.8 (4.5)	* 8.0 (6.3) ns	20.6 a,b
Arthritis and rheumatism (710-718)	2.0 (1.9)	** 5.2 (3.8) **	16.1 a,b
Congenital Anomalies (740-759)	.1 (.1)	.1 (.1)	.2
Congenital anomalies of the heart (746)	.1 (.1)	0.0 (0.0)	.2
Certain Causes of Perinatal Morbidity and Mortality (760-779)	0.0 (.2)	0.0 (.1)	0.0
Symptoms and Ill-defined Conditions (780-796)	11.7 (9.6)	** 6.2 (5.8) **	4.3 a,b
Accidents, Poisonings, and Violence (800-999)	11.2 (10.9)	10.5 (11.0)	10.6
Fracture of limbs (810-829)	1.2 (1.7)	1.3 (1.9)	.5
Sprains/Strains (840-848)	3.0 (2.3)	3.5 (3.3)	2.4
Lacerations and open-wounds; effects of foreign body (870-897, 930-939)	1.8 (1.4)	1.8 (1.7)	2.9
Superficial injury; contusion and crushing (920-929, 910-918)	1.9 (2.0)	1.7 (1.8)	1.4
Special Conditions and Examinations without Sickness (Y00-Y30)	20.0 (18.1)	**15.4 (15.5) ns	4.3 a,b
Medical or Special Exam (Y00)	9.7 (8.5)	8.6 (7.9)	4.0 a,b
Pre/Post Natal Care (Y06, Y07)	8.7 (5.9)	** 4.0 (3.8)	1.4 [1]a,b
Family Planning	NA	NA	0.3
Other	1.8 (3.8)	2.8 (3.8)	0.0
BASED ON:	2,318 encounters over 71 residents	31,807 encounters over 606 physicians	

indicated in the tables are the maximum cases available for the analysis. For any given figure the number of cases may be lower because of missing data or restrictions on the inclusion of cases for the analysis. The exact number of cases was used, however, in significance tests involving a given measure.)

As can be seen in Table 1, the profiles for USC residents and practicing physicians are remarkably similar for both ambulatory, nonpediatric encounters and encounters for all ages and locations. Practicing physicians appear to see a somewhat higher percentage of cardiological encounters (approximately 21% versus 15% over all encounters), although among both populations the proportion of circulatory diseases seen is substantial. Practicing physicians appear to provide somewhat less well care (15% versus 20% of ambulatory encounters), a difference which is almost entirely due to the greater provision of pre- and post-partum care among residents. Practicing physicians also see fewer symptoms and ill-defined conditions than residents (12% versus 6% of ambulatory encounters).

The greatest differences evident in Table 1 appear to be between GME and current practice, on the one hand, and 1990 normative practice on the other. GMENAC projects a smaller proportion of well care (4% versus 15% for practicing physicians and 20% for residents), fewer symptoms and ill-defined conditions (4% versus 6% for practicing physicians and 12% for residents) and a far greater proportion of musculoskeletal problems (20% as opposed to 6% for GME and 8% for current practice). The latter is accounted for by the great preponderance of visits for arthritis and rheumatism (ICDA-8 codes 710 to 718) projected for the year 1990. The various forms of arthritis are, in fact, the largest single diagnostic category projected for general medical care in 1990. Another category for which practice profiles are dissimilar across the three dimensions is mental disorders. Practicing physicians appear to treat fewer mental disorders than residents (6.3% versus 8.5%). However, GMENAC projects almost 12% of general adult care encounters will involve mental disorders in 1990.

In the panel's discussion it was observed that the decrement in well care projected for 1990 is most likely an artifact of the way in which the projection for general adult medical care was developed. In estimating need requirements, Family Practice, General Practice and General Internal Medicine were considered

simultaneously, with no distinction made among the conditions that would accrue differentially to the specialties. Well care represents one area in which a higher percentage of cases are treated by FPs than General Internists. As a result the distribution of patient encounters presented in Table 1 underestimates the proportion of well care to be provided by FPs in 1990. The same factor may account for the projected decrease in symptoms and ill-defined conditions.

The reasons for the large projected increases in arthritic conditions and mental disorders in 1990 is less clear. The increase in arthritic conditions may reflect the aging population in 1990 (although a similar large increase in cardiovascular problems in 1990 is not evident in Table 1.) Both trends may reflect need, rather than demand and so may over-represent requirements in this area. In any case, the panel consensus was that -- even should these projected increases in mental disorders and arthritic conditions occur -- they would not necessarily signal the need for modification of existing curricula. Mental disorders for one are already well represented in Family Practice training. According to the ACGME data the average FP resident spends at least one month on a required Psychiatry/Behavioral Science rotation which takes place in a psychiatric service or treatment center. The essentials of accredited residency programs in Family Practice stress that the resident must develop competence in the management of common psychological and behavioral problems and must also have sufficient experience with major mental disorders, both acute and chronic, to recognize and refer them appropriately. The distribution of patient encounters for residents in the USC practice profile survey confirms this orientation. Over 5% of all encounters are with mental disorders, almost one percent being with psychotic conditions.

Although training in rheumatology is not currently given any singular emphasis in Family Practice residency programs, the projected increase in arthritis and rheumatism does not necessarily signal a real deficit. Should this projected increase occur, the conditions treated may not be complex enough to require intensive training. The implication of the projected increase for graduate medical education, therefore, remains unclear and requires additional data before recommendations can be made in this area.

Table 2 presents the USC patient encounter data coded to match rotational categories. The ACGME rotational data shows that, next to Family/Internal Medicine rotations, FP residents spend most time in OBG, Pediatrics and Surgery rotations, followed by Psychiatry/Behavioral Medicine and Emergency Medicine. The USC data similarly show a large proportion of encounters with pediatric cases (in both residency training and practice), of OBG encounters, and of encounters involving surgical care. Among the subspecialties of Internal Medicine, encounters involving infectious diseases appear to rank the highest, being involved in over a quarter of the encounters of both residents and practicing physicians.

As in Table 1, the profiles of residents and practicing physicians are remarkably similar. Practicing physicians appear to treat a somewhat higher proportion of cardiological problems and a lower proportion of obstetrical/gynecological problems. The number of pediatric encounters is also lower in practice than in training. In all three instances, however, the percentage of encounters is substantial in both training and practice. The proportion of a physician's practice involving emergency care appears to decline somewhat after training (going from 3.5% to 1.5%, a difference which achieves statistical significance). This reflects the strong emphasis given to preparation in emergency care during the residency training period.

When examining the ACGME rotational data it first appears that the time spent by residents in Orthopedics, Otorhinolaryngology and Dermatology is low compared to the kind of problems seen in subsequent practice. An examination of the USC resident distribution over these categories shows that residents are nevertheless exposed to these conditions in the same proportion as practicing physicians. The percentage of encounters for residents and practicing physicians where surgical care is provided are also similar.

Table 3 presents the same rotational breakdowns as Table 2, but in this case the USC and GMENAC comparisons were constructed with ICDA-8 codes, rather than the more precise USC focus and etiology codes. These data, nevertheless, exhibit a similar pattern to that shown in Table 2, (although there are increases or decreases in certain categories such as emergency medicine and infectious diseases caused by the less precise coding). Again, the biggest discrepancies are between GME and current practice, on the one hand, and the

TABLE 2

FAMILY PRACTICE

DIAGNOSTIC AND PROCEDURAL FOCUS

COMPARISON OF GRADUATE MEDICAL EDUCATION AND CURRENT PRACTICE BASED ON ROTATIONAL CURRICULUM WITH USC ROTATIONAL EQUIVALENTS CODED FROM FOCUS, ETIOLOGY, AND OTHER PATIENT ENCOUNTER VARIABLES

	GRADUATE MEDICAL EDUCATION		1977 PRACTICE
	ACGME	RESIDENT SAMPLE	PHYSICIAN SAMPLE
	% OF TIME IN ROTATION	% OF ENCOUNTERS ALL LOCATIONS ALL AGES	
	(MUTUALLY EXCLUSIVE)	(CATEGORIES ARE NOT MUTUALLY EXCLUSIVE)	
IP/Internal Medicine			
Cardiology		8.7	12.8 **
Gastroenterology		8.1	8.6
Pulmonary Diseases		12.6	13.2
Hematology		.6	1.0
Endocrinology	37.2	8.8	9.5
Nephrology		.3	.7
Oncology		4.0	4.0
Rheumatology		1.4	2.0
Allergy		3.5	4.5
Infectious Diseases		28.4	25.9
IP/Internal Medicine NOS		12.8	11.4
Obstetrics/Gynecology	9.8	12.0	7.5**
Psychiatry/Behavior	2.6	3.8	2.8
Orthopedics	1.8	12.1	13.5
Ophthalmology	1.0	1.0	1.0
Otorhinolaryngology	1.2	7.6	6.2
Dermatology	1.3	8.2	6.8
Neurology	1.3	3.0	2.8
Urology	0.8	4.1	3.3
Pediatrics	12.6	22.3	17.8 *
Emergency Medicine	3.9	3.5	1.5 *
Surgery	7.5	7.9	7.0
BASED ON:	100 Programs	2,318 encounters over 71 residents	31,807 encounters over 606 physicians

LEGEND:

* = Significant difference between resident and physician sample at .05 level.

** = Significant difference between resident and physician sample at .01 level.

ns = No significant difference between resident and physician sample.

TABLE 3

FAMILY PRACTICE

DIAGNOSTIC AND PROCEDURAL FOCUS:

COMPARISON OF GRADUATE MEDICAL EDUCATION, CURRENT PRACTICE, AND 1990 NORMATIVE PRACTICE BASED ON ROTATIONAL CURRICULUM WITH USC AND GMENAC ROTATIONAL EQUIVALENTS CODED FROM ICDA-8 DIAGNOSTIC CATEGORIES

	GRADUATE MEDICAL EDUCATION ACGME MEDIAN % OF TIME IN ROTATION (MUTUALLY EXCLUSIVE)	GRADUATE MEDICAL EDUCATION RESIDENT SAMPLE % OF ENCOUNTERS	1977 PRACTICE PHYSICIAN SAMPLE % OF ENCOUNTERS AMBULATORY LOCATIONS AGE ≥ 17 YEARS (CATEGORIES ARE NOT MUTUALLY EXCLUSIVE)	1990 NORMATIVE (GENERAL ADULT CARE) % OF VISIT REQUIREMENTS[1]
IM/Internal Medicine				
Cardiology		15.8	22.0**	18.4 a
Gastroenterology		7.2	7.1	9.7
Pulmonary Diseases		17.4	17.5	13.8
Hematology		1.4	1.7	1.6
Endocrinology	37.2	9.8	9.7	6.6
Nephrology		.2	.3	2.0
Oncology		1.1	1.6	1.7
Rheumatology		6.8	8.4ns	22.1 a,b
Allergy		4.3	4.7	5.4
Infectious Diseases		14.4	14.6	6.7
IM/IP, NOS		12.4	11.9	12.4
Obstetrics/Gynecology	9.8	6.9	4.3*	1.1 a,b
Psychiatry/Behavior	2.6	10.6	7.5*	11.1 a
Orthopedics	1.8	11.8	13.6	25.7 a,b
Ophthalmology	1.0	.3	.5	0.4
Otorhinolaryngology	1.2	2.4	2.1	1.2
Dermatology	1.1	5.0	5.1	1.8
Neurology	1.3	4.9	5.4	6.0
Urology	0.8	3.9	4.0	1.9
Emergency Medicine	3.9	11.2	10.5	11.2
Pediatrics	12.7	22.3	17.8*	15.0 a,b
BASED ON:	100 Programs	2,318 encounters over 71 residents	31,807 encounters over 606 physicians	

See reverse side for footnotes

FOOTNOTES:

[1]GMENAC estimates represent percent of encounters in which a primary or secondary diagnosis occurred. Estimates were derived by correcting total visits for simultaneity, while leaving visits in individual categories uncorrected.

[2]Estimate of percentage of pediatric care for 1990 normative practice was taken from Table III, A.3, GMENAC Volume II, Modeling, Research, and Data Technical Panel.

LEGEND:

* = Significant difference (.05 level) between resident and physician sample

** = Significant difference (.01 level) between resident and physician sample

a = Significant difference (.01 level) between physician sample and GMENAC

b = Significant difference (.01 level) between resident sample and GMENAC

ns = No significant difference found

1990 normative projections, on the other. The major changes projected for 1990 come in the specialties of Rheumatology and Orthopedics, due to the previously mentioned increase in the proportion of arthritis encounters projected for that year. Table 3 shows the same pattern for mental disorders as that found in Table 1: namely, GMENAC projects a large increase in mental disorders compared to the proportion currently treated by practicing physicians (although the percentage of encounters handled by residents is closer to that projected by GMENAC).

Table 4 examines selected aspects of care for USC residents and practicing physicians, including pediatric, newborn, and geriatric care, surgical and obstetric care, and other characteristics of care. As can be seen in Table 4, pediatric care, newborn care, and geriatric care are each major components of both training and practice. However, the percentage of encounters with geriatric patients appears to be substantially higher in practice than during training (24% versus 15%) while, as noted previously, pediatric care appears to decrease (18% versus 22%). In addition, although explicitly labeled Pediatric rotations were frequently found in the ACGME data; explicitly labeled Geriatric rotations were rare.

Panelists were asked to comment on the possibility that residents are not receiving enough training in geriatric care, particularly given the aging population. Panel members, did not feel the observed findings with respect to geriatric care were prima facie evidence of a divergence betwen training and practice. The percentage of geriatric patients seen during residency training, although lower than that of practice, is high enough (15%) to indicate that sufficient exposure to geriatric patients is being received. To increase this percentage, in fact, risks a decrement in necessary experience in other areas.

The panel was more concerned with how the experience was obtained than with the amount, the issue of geriatric care highlighting an aspect of GME that cuts across all specialties. It was stressed that experience in an area need not be formally labeled as such in order to be provided and that formally structured experiences are not necessarily superior to experiences that are subsumed within other aspects of training. Thus, experience in geriatric care need not be obtained in geriatric rotations, as long as experience with the disease entities and problems of geriatric patients are well represented. Nevertheless exposure

TABLE 4

FAMILY PRACTICE

DIAGNOSTIC AND PROCEDURAL FOCUS

COMPARISON OF GRADUATE MEDICAL EDUCATION AND CURRENT PRACTICE BASED ON SELECTED ASPECTS OF CARE DELIVERY

	GRADUATE MEDICAL EDUCATION RESIDENT SAMPLE	1977 PRACTICE PHYSICIAN SAMPLE
	ALL LOCATIONS ALL AGES % OF ENCOUNTERS	
PEDIATRIC CARE (INCLUDING NEWBORN)	22.3	17.8 *
NEWBORN CARE	5.1	3.6 NS
GERIATRIC CARE	4.5	23.8 **
SURGICAL CARE		
PRE/POST OPERATIVE CARE	2.7	2.5
PERFORM MAJOR SURGERY	.4	.3
ASSIST MAJOR SURGERY	.2	.2
PERFORM MINOR INPATIENT SURGERY	2.4	2.2
PERFORM MINOR OUTPATIENT SURGERY	4.9	4.3
OBSTETRIC CARE		
SUPERVISION OF NORMAL PREGNANCY	5.9	3.9
SUPERVISION OF COMPLICATED PREGNANCY	.7	.1
DELIVERY	.8	.4
OTHER CHARACTERISTICS OF CARE		
REGULAR PATIENT	66.0	85.3 **
PATIENT SEEN BEFORE	65.5	89.3 **
MAJORITY OF CARE	66.6	85.4 **
SELF-REFERRED PATIENT	86.8	93.0 **
REFERRALS TO MD FOR CARE/CONSULT	8.9	7.8 NS
OTHER REFERRALS	3.0	1.2 **
BASED ON:	2,318 ENCOUNTERS OVER 71 RESIDENTS	31,807 ENCOUNTERS OVER 606 PHYSICIANS

LEGEND: * = SIGNIFICANT DIFFERENCE BETWEEN RESIDENT AND PHYSICIAN SAMPLE AT .05 LEVEL.

** = SIGNIFICANT DIFFERENCE BETWEEN RESIDENT AND PHYSICIAN SAMPLE AT .01 LEVEL.

NS = NO SIGNIFICANT DIFFERENCE BETWEEN RESIDENT AND PHYSICIAN SAMPLE.

is not the same thing as training and all experiences during GME -- whether formally labeled or not -- should be structured to provide the relevant skills and understanding. Panelists, therefore, considered the issue of the adequacy of geriatric training in GME to be an open one at this time.

With respect to surgical care, Table 4 shows once again similar profiles with respect to surgical care in training and subsequent practice. Pre/post operative care and actual surgeries account for almost 11% of the encounters in training and 10% in practice. In both, minor office surgery, minor inpatient surgery, and pre/post operative care are the predominant categories. Other data indicate that the surgery component of Family Practice in both training and practice are marked by great heterogeneity. According to the ACGME Questionnaires 5% of residents observed surgery only, while another 5% performed major surgery; 22% of residents assisted major surgery, and 69% performed minor surgery. (AAFP data indicated a higher percentage of residents assisting in surgery -- over 95% of programs indicated that their residents participated in surgery.) A similar degree of heterogeneity is found among practicing physicians. In its 1979 survey of family practice residency programs (Black, et al, 1980), 62% of physicians reported hospital practice privileges for surgery first assist, 40% for minor surgery, and 7% for major surgery. Similarly, among office-based active members of the AAFP, 56% performed surgery-assisting, 14% performed surgery-major in their hospital practice (AAFP,1980b), while 80% performed office surgery (AAFP,1980a). The levels of surgery performed and their heterogeneity, therefore, appear to be roughly parallel in both training and practice.

Table 4 also shows, as in previous tables, a large obstetric component of graduate medical training in Family Medicine. According to the USC survey, deliveries and pre- and post-partum care account for over 7% of the encounters in residency training. (The ACGME questionnaires indicate that the average FP resident performs 75 deliveries during the course of training.) The obstetric component of current practice was lower, accounting for 4.4% of the encounters (a difference which achieved statistical significance). Reference to Table 1 shows that the 1990 projections for obstetric care are also lower than those evident in both training and current practice. (The 1.4% of care falling under ICDA codes 650-661 delivery for GMENAC represents the ambulatory component of pre- and post-natal care and is, therefore, comparable to the Y06 and Y07 codes

for the USC data.) These comprise 8.7% of encounters for residents and 4.0% of ambulatory encounters for currently practicing physicians.

Panelists were asked to comment on the possibility that there is a greater emphasis on obstetric care during training than warranted by subsequent practice. They concluded that the emphasis placed on obstetric care during training was essential for several reasons. First, although the proportion of obstetrical care is lower during practice than training, at over 4%, it nevertheless represents a significant aspect of the Family Practice specialty profile. In addition, obstetric care may be under-represented in the USC study due to the inclusion in the sample of physicians who are not graduates of FP residency programs. In this light, an examination of obstetric care by age might show a larger proportion of such care delivered by younger physicians than in the sample as a whole. It is also instructive to examine, not only the percentage of encounters in which obstetric care is provided, but the percentage of Family Practice physicians who deliver obstetric care. Data indicates this percentage to be substantial. Among graduates of Family Practice residency programs (Black, et al, 1980), 64% reported providing routine OB care, while 38% provided complicated OB care, and 14% performed Cesarean sections. Therefore, although obstetric care may be a relatively small portion of any single physicians practice, it is nevertheless present in the practices of the majority of Family Physicians.

Finally, despite the seeming trend to the contrary evident in Table 1, the obstetrical component of Family Practice is expected to expand, rather than contract, in the future. Not only is the birth rate expected to rise, but the percentage of all deliveries accruing to generalists (which the USC data show to be less than 20%) is expected to grow. GMENAC projected that 31.5% of deliveries would be performed by generalists (primarily, Family Practitioners) in 1990. The figures presented in Table 5 are somewhat deceptive in this regard in that, as noted previously, general adult care requirements were modeled for all general care physicians together without distinguishing between conditions that would accrue differentially to General Internists and Family Practitioners. Since obstetrical care will be performed almost entirely by Family Practitioners the percentage of the specialty devoted to obstetrical care is underenumerated in Table 1, which is one cause of the apparent discrepancy between residency

training, current practice profiles and 1990 normative practice profiles with regard to obstetrical care.

Like the provision of surgical care, the provision of obstetric care in Family Practice illustrates another aspect of training and practice which complicates evaluation of the training/practice relationship, namely that of heterogeneity within the specialty. The content of any given physician's practice may or may not include a particular component, and, in fact it is commonplace for the profile of an individual physician to vary from the specialty norm due to both personal preference and external opportunities or constraints. Indicative of this is the wide regional variation in obstetrical and surgical care in Family Practice. Based on the AAFP Survey of the hospital practices of its active office-based members, the delivery of both obstetric care and surgery is lowest on the eastern seaboard (the New England, Middle Atlantic and South Atlantic regions) and generally highest in the West North Central, Mountain, and West South Central regions. These differences are quite dramatic. Only 10% of physicians perform routine obstetric care in the Middle Atlantic region, while 75% do in the West North Central region. Given such variation the levels of training needed to achieve the necessary competency are more problematical and cannot be defined or evaluated on the basis of specialty averages as a whole.

Table 4, in conclusion, presents indices relating to patient care continuity. As can be seen, although practicing physicians have a greater percentage of regular, self-referred patients for whom they provide the majority of care (greater than 80%) the proportion of such patients treated during residency training is also large (well over 60%). FP training programs, therefore, appear to be providing their residents with significant experience in the delivery of primary care. Referral patterns in residency training and practice are also quite similar, although residents appear to be referring slightly higher numbers of patients both to physicians and to other health care providers. Given the triage function of family practitioners, the number of referrals appears low for both residents and practicing physicians. Panelists, however, noted that this is because the distribution in Table 4 is based on patient encounters, and so under-represents the number of patients who are referred by a physician at some point in their treatment.

2. Ambulatory Versus Inpatient Emphasis in Family Practice

Table 5 represents the various indices calculated for ambulatory care in GME, current practice, and 1990 normative practice. As can be seen in Table 5, FP residents spent on average over a quarter of their time in Family Practice Ambulatory centers. That this is only a lower bound estimate is obvious upon examining the corresponding statistic for the USC residents. Data from the USC Activity Overview show that Family Practice Residents spend over three-fourths of their time in ambulatory settings, as do practicing physicians. An examination of the percentage of ambulatory versus inpatient encounters shows similar results: for both FP residents and practicing physicians, the focus is on ambulatory care, with approximately three-fourths of the encounters occurring in ambulatory settings. The ratio of ambulatory encounters to inpatient admissions is also similar across three populations. All three measures, therefore, indicate similar profiles among residents and practicing physicians in terms of the ambulatory versus inpatient focus on training and practice. (Other studies have shown an even higher ambulatory component among practicing FP's. In the follow-up survey of residency graduates in New York (1980) 19.5 encounters per week took place in the hospital, 103.4 in the office, and 17.2 in other ambulatory settings, for a total of 86% in ambulatory settings. The graduate follow-up of Virginia residents (Ciriacy, et. al., 1980) showed 85% of the encounters in ambulatory settings, while the follow-up of Washington residents (Geyman, et al) showed 89% of the encounters in ambulatory settings.)

Panelists were unaware of any reasons why these observed relationships would not continue in the future or of any other factors which might warrant a revisions of the present ambulatory versus inpatient focus in GME.

3. Emphasis on Teaching, Research and Administration in Family Practice

Table 6 presents the various indices of teaching, research and administrative activities. As noted, little quantifiable program data was available concerning the TRA component of training. That available from the AAFP directory of residency training indicated that research is required in 14% of the programs and encouraged in 79%. An examination of the USC Activity Overview Codes occurring in a three-day period show that at least 25% of

TABLE 5

FAMILY PRACTICE

AMBULATORY VERSUS INPATIENT FOCUS:
COMPARISON OF GRADUATE MEDICAL EDUCATION, CURRENT PRACTICE
AND 1990 NORMATIVE PRACTICE

INDICATOR	GRADUATE MEDICAL EDUCATION PROGRAM DATA (n=100)		GRADUATE MEDICAL EDUCATION RESIDENT SAMPLE (n=71)		1977 PRACTICE PHYSICIAN SAMPLE (n=606)		1990 NORMATIVE GMENAC	
1) PERCENT TIME IN AMBULATORY VERSUS INPATIENT SETTINGS:	% time in Outpatient versus Inpatient rotations:		% time in Outpatient versus Inpatient settings:		% time in Outpatient versus Inpatient settings:		NA	
	% of time in FP center (LOWER BOUND ESTIMATE)[1]	28.6%	Outpatient:[2]	78.3%	Outpatient:[2]	75.1% ns		
	% of time in Inpatient settings:	NA	Inpatient:[2]	21.7%	Inpatient:[2]	24.9% ns		
2) PERCENT AMBULATORY ENCOUNTERS VERSUS INPATIENT ADMISSIONS:	Yearly Outpatient encounters in FP center:[3]	15000	Percent Outpatient encounters in study period:[4]	95.8%	Percent Outpatient encounters in study period:[4]	97.0%	NA	
	Yearly Inpatient admissions from FP center:[3]	500	Percent Inpatient Admissions:[4]	4.2%	Percent Inpatient Admissions:[4]	3.0%		
	Ratio Outpatient encounters to Inpatient admissions:	30:1	Ratio Outpatient encounters to Inpatient admissions:	23:1	Ratio Outpatient encounters to Inpatient admissions:	32:1 ns		
3) % AMBULATORY VERSUS INPATIENT ENCOUNTERS:			Weekly Outpatient encounters:[5]	63.6	Weekly Outpatient encounters:[5]	105.6	Weekly Outpatient encounters:[6]	120
			Weekly Inpatient encounters:[5]	21.5	Weekly Inpatient encounters:[5]	37.7	Weekly Inpatient encounters:	NA
			% Outpatient encounters:	74.7%	% Outpatient encounters:	73.7% ns	% Outpatient encounters:	NA

[1]Taken from the AAFP 1982 Directory of Family Practice Residency Programs: average number of half days (3-4 hrs)/wk spent by FP residents in the FP center.

[2]Taken from the Activity Overview section of the USC instrument. Outpatient and inpatient codes are listed in Chapter 2.

[3]Taken from the ACGME questionnaire.

[4]Taken from the Patient Encounter section of the USC instrument. Ambulatory encounters are those occurring in an ambulatory setting (office, OPD, clinic, emergency room, extended care facility, industry/school, or home). Inpatient admissions were defined as any first encounter occurring in a hospital or any encounter in which the next contact was "at hospital admission."

[5]Taken from the Week's Practice Summary of the USC instrument.

[6]Taken from Table III.A.3 of the GMENAC report, Volume II: Modeling, Research, and Data Technical Panel.

TABLE 6

FAMILY PRACTICE

EMPHASIS ON TEACHING, RESEARCH, AND ADMINISTRATION: COMPARISON OF GRADUATE MEDICAL EDUCATION, CURRENT PRACTICE, AND 1990 NORMATIVE PRACTICE

INDICATOR	GRADUATE MEDICAL EDUCATION PROGRAM DATA (n=100)	GRADUATE MEDICAL EDUCATION RESIDENT SAMPLE (n=71)	1977 PRACTICE PHYSICIAN SAMPLE (n=606)	1990 NORMATIVE GMENAC
1) PHYSICIANS WITH ANY TEACHING, RESEARCH, OR ADMINISTRATION (TRA)	% Residents with any TRA: % with required teaching: NA % with some teaching: NA % with required research:[1] 13.9% % with some research:[1] 78.5% % with required administration: NA % with some administration: NA	% Residents with any TRA codes in a 3-day period[2] LOWER BOUND ESTIMATE 74.6% % with any teaching: 25.4% % with any research: 7.0% % with any patient-related administration: 59.2% % with any management/ administration: 50.7%	% Physicians with any TRA codes in a 3-day period[2] LOWER BOUND ESTIMATE 59.2%* % with any teaching: 18.8% % with any research: 5.1% % with any patient-related administration: 44.6% % with any management/ administration: 39.3%	NA
2) PERCENT OF TIME IN TEACHING, RESEARCH, AND ADMINISTRATION:	NA	Percent time in[2] Teaching 5.6% Research 0.4% Patient Care Administration 4.7% Management 3.9% TRA total 14.7% Direct Patient Care 60.0%	Percent time in[2] Teaching 4.2% Research 0.5% Patient Care Administration 4.0% Management 4.0% TRA total 12.7% ns Direct Patient Care 70.0% ns	NA
3) PHYSICIANS WITH MAJOR TEACHING, RESEARCH, AND ADMINISTRATION:	NA	% Residents with major TRA Training:[3] 10.8%	% Physicians with full-time TRA responsibility:[4] 3-5%	% FTE's required for full-time TRA:[5] 11.8

[1]Taken from the ACGME questionnaire, p 17: Do any family practice residents carry on a research project, either individually or in association with a faculty member?

[2]Taken from the Activity Overview section of the USC survey instrument.

[3]Taken from the Activity Overview section. Defined as any resident spending at least one-third of total professional time in teaching, research, and/or administrative activities.

[4]The 1980 AMA survey lists 1412 out of 60,049 Family Practitioners (2.5%) as involved in full-time teaching, research, or administration. A survey performed by the AAFP of their membership (April 1980) found 4.9% involved in full-time teaching, research, or administration (personal communication).

[5]Taken from Table III.A.3 GMENAC, volume II: Modeling, Research, and Data Technical Panel (footnote 6).

residents are performing some kind of teaching activities, 7% research, 59% patient-related administration, and 51% management-oriented administration. For USC physicians the corresponding figures are 19%, 5%, 45%, and 39% respectively. Research, therefore, appears to be the least prominent of the non-DPC care activities of both Family Practice residents and practicing physicians.

An examination of the percent of total time in TRA activities, in the second row, shows similar profiles. Residents spend about 15% of their time in TRA while practicing physicians spent about 13% of their time in these activities. (Other estimates are slightly lower: 8.1% in the Washington follow-up study and 11.0% in the Minnesota study.) For both residents and physicians, research accounts for little (less than 1%) of professional time. The remaining TRA time is approximately equally divided among teaching and administration. That residents and practicing physicians have similar profiles is encouraging, but does not provide definitive data on the adequacy of GME preparation for subsequent practice. In order to assess the actual congruence between training and current practice in this area more detailed information is needed in the future on the content as well as amount of time in various TRA activities.

The data, in fact, suggest that the current TRA emphasis is inadequate to meet future requirements. As can be seen in row 3 of Table 6, GMENAC projects the need for full-time Family Practitioners in TRA at almost 12%. At present there appear to be at most 5% of FP's in this category. The need for increased numbers of Family Practitioners to perform teaching, research, and administrative functions was affirmed by the panel, with particular emphasis on requirements in teaching. The need is further supported by the Academic Manpower Survey performed by the Association of American Medical Colleges which (based on projected faculty and student growth) found a substantial unmet need in the specialties of Family Medicine and Emergency Medicine (the two most recent specialties). Current funding policies appear to create difficulties for all specialties in ensuring that teaching and research needs are met, a problem which Family Practice has dealt with by creating its own teaching fellowships. The present data provide no evidence on the extent to which the FP requirement for teaching physicians are currently being met. Although 11% of FP residents have what was defined as major experience in teaching, research, or administration (i.e., experience accounting for at least one-third of

professional time in a three-day period). this is at best an indirect measure. To assess this research issue, further data is required for precise estimation of the number of full-time TRA physicians currently being trained.

4. Use of Nonphysician Providers in Family Practice

Table 7 presents summary statistics on the use of nonphysician providers in training and practice. The AAFP program data on physician extenders shows one nontraditional NPP for every 12 residents. The USC resident ratios are higher: one for every four residents and one for every 7 practicing physicians. (The latter is feasible given the current active supply of 8,528 nurse practitioners and physician's assistants for Family Practice). From these ratios and the statistics given in row 2, it appears that residents may have somewhat greater exposure to nontraditional NPP's than is available in current practice and may be approaching the ratios projected for 1990. An examination of the percentage of visits delegated (row 3) shows, however, that essentially equivalent numbers of visits are delegated in residency training and current practice. These delegation patterns also closely approximate those projected for 1990 by GMENAC. An examination of row 4 shows that, as expected, residents and practicing physicians refer very few patients to NPP's, even nontraditional types, no doubt maintaining instead the traditional delegation patterns between physicians and allied health care providers.

Panelists felt these trends would continue and were unaware of any factors which warranted a re-thinking of current GME practice regarding the use of nonphysician providers during residency training.

B. THE RELATIONSHIP BETWEEN GRADUATE MEDICAL EDUCATION AND PRACTICE IN PSYCHIATRY

The goal of the residency program in Psychiatry is to train physicians in the "...diagnosis, etiology, treatment and prevention of all psychiatric disorders and the common neurological disorders (Essentials, 1979)." Given the complex etiology of psychiatric illness which involves "...an intricate web of social, psychological, economic and environmental, as well as biological factors," (GMENAC Final Report in Psychiatry, p. 19), training in Psychiatry must encompass a variety of content areas. With the increasing emphasis placed on biological factors and somatic therapies, the amount of training in

TABLE 7

FAMILY PRACTICE

USE OF NONPHYSICIAN PROVIDERS: COMPARISON OF GRADUATE MEDICAL EDUCATION, CURRENT PRACTICE AND 1990 NORMATIVE PRACTICE

INDICATOR	GRADUATE MEDICAL EDUCATION PROGRAM DATA	GRADUATE MEDICAL EDUCATION RESIDENT SAMPLE (n=71)	1977 PRACTICE PHYSICIAN SAMPLE (n=606)	1990 NORMATIVE GMENAC
1) NPP TO PHYSICIAN RATIO:	NPP to Resident ratio: All allied health providers: NA Nontraditional health providers:[1] 1:12	NPP to Resident ratio: All allied health providers:[2] 1:5.1 Nontraditional health providers:[2] 1:4.0	NPP to Physician ratio: All allied health providers:[2] 1:2.1 Nontraditional health providers:[2] 1:6.8 ns	Specialty specific NPP to Physician supply ratio: All allied health providers: NA Nontraditional health providers:[3] 1:3.2 a
2) AVAILABILITY OF NPP'S WITHIN THE PROGRAM/ PRACTICE	% Residency programs with a nontraditional NPP:[1] 43.3%	% practices with a nontraditional NPP:[2] 37.5%	% practices with a nontraditional NPP:[2] 24.8% +	NA
3) PERCENT OF VISITS DELEGATED:	NA	% of total practice visits to other staff only:[4] 11.1%	% of total practice other staff only: 13.5% ns	% of total visits to FP team delegated to NPP's:[5] 11.7%
4) PERCENT OF ENCOUNTERS REFERRED TO NPP's:	NA	% of encounters referred to non-traditional NPP's:[6] 0.1%	% of encounters referred to non-traditional NPP's:[6] 0.3%	NA

[1]Taken from 1982 Directory of Family Practice Residency Programs averaged across all programs.

[2]Taken from item G of the Questionnaire section of the USC survey instrument. Total FTEs for nonphysician providers in the practice were divided by total FTEs for physicians in the practice.

[3]Taken from Table 10 (p 39) of the GMENAC Report, Volume VI: Nonphysician Health Care Provider Technical Panel which shows 20423 nontraditional NPPs available to Family Practice in 1990 (8775 Family NP's and 11648 PAs) compared to a projected supply of 64,400 FP/GP's.

[4]Taken from the Week's Practice Summary. Calculated as the percentage of visits to other staff only over total visits to the practice (i.e. physician's visits plus staff visits).

[5]Taken from Table III.A.3 of the GMENAC report, Volume II: Modeling, Research, and Data Technical Panel.

[6]Taken from the Patient Encounter section of the USC instrument; code 8 (physician extender) of the item "Referral/Consultation."

LEGEND:

* = Significant difference (.05 level) between resident and physician sample

a = Significant difference (.01 level) between physician sample and GMENAC

ns = No significant difference found

biologically oriented disciplines, including medicine, neurology, and psychopharmacology is of interest. Training, on the other hand, should also provide familiarity with the more traditional nonsomatic therapies and with psychometric diagnostic techniques and instruments (Essentials, 1979).

The setting of care is also an important consideration. As indicated in the GMENAC model for Psychiatry, Psychiatrists see patients in a variety of settings which yield very different profiles in terms of patient problems, and approaches to treatment. The Essentials of Accredited Residencies in Psychiatry, therefore, recommend that residents devote at least one-third, but no more than two-thirds of their training time, to the care of hospitalized patients.

The relationship of psychiatrists to psychologists, social workers, and other nonphysician providers (NPPs) of health care is also an area of concern for graduate training. As noted in the GMENAC report on Psychiatry, the role of nonphysician providers in the treatment of mental disorders is different from that in other medical specialties in which the NPP traditionally practices directly with or under the supervision of the physician. In mental health care, clinical psychologists, psychiatric social workers, as well as other types of professionals and paraprofessionals may practice independently of psychiatrists, thus complicating the interactions among these various types of providers. For this reason, the Essentials for Psychiatry Stress (p. 41) that ". . . a significant amount of the residents' clinical work must involve an active collaboration with psychologists, psychiatric nurses, social workers, and other professional and paraprofessional mental health personnel."

A number of studies have shown a substantial portion of the psychiatrist's professional time to be involved in nonpatient care activities. Up to nineteen percent of psychiatrists are engaged fulltime in teaching, research and administrative activities (AMA, 1977). Overall, psychiatrists (both patient care and nonpatient care) devote an average of 3.0 hours per day to teaching, research and administration. Given this substantial involvement in TRA activities it would appear that graduate medical education in Psychiatry should provide significant experience in the training of residents for subsequent teaching, research, and administration activities.

1. Diagnostic and Procedural Focus in Psychiatry

Table 8 presents the distribution of encounters and time across the major diagnostic categories treated in Psychiatric practices. (Only time is presented for the 1990 normative projections since GMENAC modeled Psychiatry service requirements in terms of time rather than visits). Presented first in the table is the distribution of adult psychiatric conditions as a percentage of adult psychiatric encounters alone. Next adult psychiatric conditions are presented in relation to all conditions in the practice. The distribution of all encounters (inpatient and ambulatory) is presented in the first column, while the distribution for inpatient encounters alone follows in parentheses.

An examination of Table 8 shows that, among adult psychiatric conditions, 41% of the residents' encounters and 32% of their time involve psychoses. The numbers for practicing physicians are similar: 37% of all adult psychiatric encounters and 30% of all time are spent with psychotic conditions. The greatest differences evident in Table 8 occur with respect to the GMENAC projections which show psychiatrists spending a higher proportion of both total and inpatient time with psychoses. This amounted to 57% of total time and 68% of inpatient time.

Practicing physicians also appear to treat more neuroses than residents. Among Residents, 18% of encounters and 22% of professional time was spent with neuroses; for physicians these figures are 33% and 37% respectively. When neuroses, personality disorders, psychophysiologic problems, and other nonpsychotic problems are combined, residents spend 41% of their adult psychiatric encounters and 55% of their time with these conditions, while practicing physicians spend a somewhat greater proportion, amounting to 52% of their adult psychiatric encounters and 63% of their time. GMENAC, however, projects a need of only 28.9% of adult psychiatric time for these conditions.

When examining all encounters, it can be seen that residents spend less time with adult psychiatric patients than is spent by practicing physicians and spend more time with other classes of patients, a fact that might be expected given the emphasis on diverse training experiences in the typical psychiatric program. Residents have approximately the same number of nonpsychiatric neurological patient encounters as practicing physicians (about 1% to 2%) but

TABLE 8
PSYCHIATRY

DIAGNOSTIC AND PROCEDURAL FOCUS:

COMPARISON OF GRADUATE MEDICAL EDUCATION, CURRENT PRACTICE AND 1990 NORMATIVE PRACTICE BASED ON DISTRIBUTION OF ENCOUNTERS AND ENCOUNTER TIME BY DIAGNOSTIC CLASS

	GRADUATE MEDICAL EDUCATION RESIDENT SAMPLE				1978 PRACTICE PHYSICIAN SAMPLE				1990 NORMATIVE GMENAC PROJECTIONS[1]	
	% of encounters		% of time		% of encounters		% of time		% of time	
	ALL ENCOUNTERS (INPATIENT ENCOUNTERS GIVEN IN PARENS)									
Adult Psychiatric Only										
Psychoses	41.3	(55.2)	32.2	(50.5)	ns 36.9	(53.9) ns	ns 29.7	(49.7) ns	a,b 57.1	(68.3) a,b
Neuroses	17.5	(8.1)	22.4	(9.8)	** 32.6	(17.6) **	** 37.4	(20.3) **	a,b 20.8	(19.9) a,b
Personality Disorders	14.5	(6.4)	21.6	(10.6)	14.2	(5.2)	18.2	(6.3)		
Psychophysiologic	2.1	(2.3)	1.0	(.6)	1.1	(.7)	1.5	(1.2)	8.1	(1.7)
Other nonpsychotic disorders	7.1	(1.8)	10.1	(3.5)	4.5	(2.5)	5.6	(2.8)		
Alcoholism	6.7	(9.3)	5.3	(8.9)	6.1	(11.7)	4.3	(11.9)	4.4	(2.2)
Drug Addiction	3.6	(4.1)	3.3	(6.1)	1.2	(1.8)	1.1	(2.8)	1.0	(.3)
Mental Retardation	.7	(1.1)	.3	(.6)	.8	(.6)	.4	(.2)	2.2	(1.1)
Organic Brain Syndrome	6.5	(11.6)	3.8	(9.4)	2.6	(5.9)	1.6	(4.9)	6.4	(6.7)
Geriatric (not mutually exclusive with above categories)	6.2	(11.6)	3.3	(8.6)	6.5	(13.5)	4.6	(12.3)	NA	NA
SUM	106.2	111.6	103.3	108.6	106.5	113.5	104.6	112.3	100.0	100.0
All Encounters										
Adult Psychiatric	72.4	(71.1)	71.8	(64.0)	** 87.5	(83.6) **	** 87.5	(80.7) *	ns 88.9	-
Child and Adolescent Psychiatric	6.5	(1.2)	9.3	(2.9)	* 3.6	(5.5) **	** 4.0	(7.0) **	a,b 11.1[2]	-
Consults, excluding above	6.1	(7.9)	6.5	(10.2)	4.0	(6.0)	3.7	(7.4)	included above	-
Neurological, nonpsychiatric	1.2	(2.1)	1.0	(1.7)	0.4	(0.1)	1.7	(0.7)	0	-
Medical/Surgical	13.9	(17.8)	11.2	(21.0)	** 4.3	(4.3) **	** 4.2	(4.1) **	a,b 0	-
SUM	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
BASED ON:	643 encounters over 52 residents				11402 encounters over 643 physicians					

FOOTNOTES:

[1]Taken from Table 7, OGME: Physician Requirements - 1990 for Psychiatry.

[2]Taken from Page 27, OGME: Physician Requirements - 1990 for Psychiatry. (Child care requires 12.5% requirements for adult care so that child care is equivalent to 12.5 ÷ 112.5 percent of the practice.)

LEGEND:

* = Significant difference (.05 level) between resident and physician sample

** = Significant difference (.01 level) between resident and physician sample

a = Significant difference (.01 level) between physician sample and GMENAC

b = Significant difference (.01 level) between resident sample and GMENAC

ns = No significant difference found

perform a somewhat greater number of consults (6% versus 4% of encounters). Table 8 also shows more encounters that are primarily medical or surgical for residents than for practicing physicians. These encounters, as noted in Appendix A-IV, are those for which a medical or surgical problem type is indicated but which do not have a psychiatric or psychophysiologic etiology. These account for 14% of the encounters and 11% of the practice time of residents compared with 4% of the encounters and 4% of the practice time of practicing physicians.

Residents, in addition, have significantly more exposure to child and adolescent psychiatric conditions in terms of both encounters (7% versus 4%) and time (9% versus 4%). Residents' interactions with children, furthermore, appear to be of a qualitatively different nature than the interactions of practicing physicians. Upon examination of the inpatient figures in parentheses it can be seen that -- although residents devote far more of their total patient encounters (7% versus 3%) to children and adolescents than do practicing physicians -- only 1% of their inpatient encounters are with children and adolescents compared to 5% for practicing physicians. The child psychiatry experiences of residents, therefore, appear to take place largely in an ambulatory setting, while those of practicing physicians take place in an inpatient setting. Interestingly, the total proportion of time devoted by currently practicing physicians to child psychiatry is far less than that projected by GMENAC (which estimates that 11% of the general psychiatry FTEs will be for child psychiatry compared to 4% currently). Even the child psychiatry component of residency training (at 9% of total practice time) falls below that projected GMENAC.

Table 9 presents the distribution of inpatients rather than encounters or time across the major diagnostic categories. (The number of inpatients is too small to yield stable estimates for the adult psychiatric conditions seen by USC residents and so was omitted from the table.) The distribution of adult psychiatric patients taken from the ACGME data is similar to the proxy measure of inpatients for USC practicing physicians. Psychoses are the major category, followed by neuroses. Alcoholism is a major category in both. The GMENAC distribution of inpatients is similar but shows a smaller proportion of psychotic patients (even though, as noted in the previous table, more time and visits are projected for these patients). The GMENAC projections also show a

TABLE 9

PSYCHIATRY

DIAGNOSTIC AND PROCEDURAL FOCUS

DIAGNOSTIC AND PROCEDURAL FOCUS: COMPARISON OF GRADUATE MEDICAL EDUCATION, CURRENT PRACTICE, AND 1990 NORMATIVE PRACTICE BASED ON DISTRIBUTION OF PATIENTS IN INPATIENT SETTINGS

	GRADUATE MEDICAL EDUCATION PROGRAM DATA (ACGME)	GRADUATE MEDICAL EDUCATION RESIDENT SAMPLE	1978 PRACTICE PHYSICIAN SAMPLE	1990 NORMATIVE GMENAC PROJECTIONS
	% of inpatients (median used as a measure of central tendency)	% of inpatient admissions or first encounters in hospital setting	% of inpatient admissions or first encounters in hospital setting	% of patients in acute hospital/chronic institutional setting
Adult Psychiatric Patients Only				
Psychoses	44.5	-[1]	45.0	36.8 a
Neuroses	15.1	-	18.8	[27.6 ns
Personality Disorders	10.8	-	7.0	
Psychophysiologic	2.8	-	1.5	[3.8 ns
Other nonpsychotic disorders	N/A	-	4.0	
Alcoholism	9.9	-	14.7	13.3
Drug Addiction	3.6	-	2.6	1.4
Mental Retardation	1.5	-	0.5	2.5
Organic Brain Syndrome	3.5	-	5.9	14.4
Geriatric	8.2[2]	-	8.2[3]	N/A
SUM	100.0		108.2	100.0
Total Patient Population				
Adult Psychiatric	[illegible].9	52.5%	66.7	N/A
Child/Adolescent Psychiatric	3.4	3.5	2.9	
Consults to Med/Surg patients	19.3	21.0	20.0	
Neurological, Nonpsychiatric	5.2	1.8	1.4	
Medical & Surgical	30.1	21.1	** 9.0	
SUM	100.0	100.0	100.0	
BASED ON:		643 encounters over 52 residents	11402 encounters over 643 physicians	

FOOTNOTES:

[1]Total number of encounters was too small to derive stable estimates for individual psychiatric conditions.

[2]It was not clear from individual ACGME forms whether or not geriatric patients were mutually exclusive with other categories. In calculating %'s mutual exclusivity was assumed. Therefore, percentages in other categories may be underenumerated.

[3]Not mutually exclusive with above categories.

LEGEND:

* = Significant difference (.05 level) between resident and physician sample

** = Significant difference (.01 level) between resident and physician sample

a = Significant difference (.0[illegible] level) between physician sample and GMENAC

ns = No significant difference found

higher proportion of patients with Organic Brain Syndrome, a difference that was also evident in Table 8.

As in Table 8, the percentage of medical and surgical patients is higher for USC residents than practicing physicians. The patient distribution taken from the ACGME forms also shows a similarly high percentage.

Table 10 presents some approximate correspondences to rotational categories. As abstracted from the ACGME forms, it appears that residents spend about 50% more of their time in outpatient psychiatry rotations than inpatient. This is supported by the USC resident data which show that although residents have an approximately equal number of encounters in outpatient and inpatient settings, they spend more than twice as much time in outpatient settings. This emphasis appears even more strongly among practicing physicians, who have 58% of their encounters and spend 70% of their time in general psychiatric outpatient settings.

Table 10 shows that approximately 6% of time is spent in alcohol or drug abuse rotations. This corresponds closely to the 7% of time USC residents spend seeing drug/alcohol abuse patients and the 5% of time spent by practicing physicians. Residents spend approximately 5% of their time in Emergency Care rotations and 10% of their time seeing emergency problems. Practicing physicians spend less time with emergencies than residents (4% of encounters and 3% of time).

According to the ACGME rotational data, residents also spend a significant amount of time in Child and Adolescent Psychiatry rotations, a figure born out by the large percent of time (10%) spent by USC residents in treating child and adolescent psychiatric problems. As noted previously, this proportion drops to 4% in current practice.

The geriatric component of care is approximately equivalent across the three data sets. The geriatric component of training taken from the ACGME and USC data is higher than that shown by the 1978 AADPRT survey. In this survey only 19 programs out of 105 had a geriatric rotation, which averaged 4.7 months across 19 programs. Totaled over all programs this sums to less than 1% of time spent in geriatric rotations. Sixty-seven percent of the programs indicated

TABLE 10

PSYCHIATRY

DIAGNOSTIC AND PROCEDURAL FOCUS:

COMPARISON OF GRADUATE MEDICAL EDUCATION AND CURRENT PRACTICE BASED ON ROTATIONAL CURRICULUM

	GRADUATE MEDICAL EDUCATION			1978 PRACTICE PHYSICIAN SAMPLE	
	PROGRAM DATA (ACGME)	RESIDENT SAMPLE			
	Median % time in rotation (mutually exclusive)	% of encounters (not mutually exclusive)	% of time (not mutually exclusive)	% of encounters (not mutually exclusive)	% of time (not mutually exclusive)
General Psychiatry					
Inpatient	26.5	33.0 (33.0)	21.4 (21.4)	**26.0 (26.0) ns	**16.7 (16.7) *
Outpatient	34.8	36.4 (0)	50.6 (0)	**58.3 (0)	**69.6 (0)
Alcohol or Drug Abuse	5.6	7.9 (9.7)	6.8 (9.9)	6.6 (11.6)	4.9 (12.7)
Emergency Room	4.8	10.6 (8.0)	9.5 (9.5)	** 4.1 (5.8) ns	** 2.8 (6.2) *
Child & Adolescent Psychiatry	7.2	6.9 (1.2)	10.2 (3.0)	* 3.8 (5.5) **	** 4.2 (7.5) **
Geriatrics	3.5	4.8 (8.4)	2.6 (5.7)	5.9 (11.9)	4.2 (10.5)
Neurology[1]	3.8	14.1 (13.7)	12.4 (12.1)	10.2 (15.8)	8.5 (15.2)
General Medicine[2] (Family Medicine, Internal Medicine, Pediatrics)	11.3	23.7 (29.3)	19.5 (30.0)	**11.4 (17.0) **	** 8.8 (13.3) **
BASED ON:		643 encounters over 52 physicians		11402 encounters over 643 physicians	

[1]For USC resident and physician data, any encounter with a neurological component was counted in this category whether a psychiatric or nonpsychiatric diagnosis.

[2]For USC resident and physician data, any encounter with a medical component was counted in this category whether a psychiatric or nonpsychiatric diagnosis.

LEGEND:

* = Significant difference (.05 level) between resident and physician sample

** = Significant difference (.01 level) between resident and physician sample

that they had no specific requirement to see geriatric patients, while 56% indicated that there was no specific training program in geriatrics.

Although Table 10 indicates that the amount of time spent in neurology rotations (as given in the ACGME data) is small in relation to the percentage of patients with neurological problems seen by both the USC residents and practicing physicians, it must be kept in mind that the latter include any problem with a neurological component, whether psychiatric or nonpsychiatric. The same is true of general medicine. (With respect to the latter the same trend is apparent in Table 10 as Tables 8 and 9 presented previously: residents appear to be seeing more problems with a medical and/or surgical component than practicing physicians.)

Table 11 illustrates the use of various diagnostic and therapeutic procedures by USC residents versus practicing physicians. From an examination of Table 11, it appears that practicing physicians perform psychotherapy, as well as drug therapy (chemotherapy) in a somewhat greater percentage of encounters. This difference increases when looking at inpatient encounters only. Residents, on the other hand, appear to perform slightly more neurological diagnostic tests and substantially more medical diagnostic tests, a fact which is undoubtedly related to the greater proportion of nonpsychiatric medical problems seen. When considering the administration of somatic diagnostic or therapeutic procedures as a whole, however, residents and practicing physicians show similar profiles across both their outpatient and inpatient encounters.

In the panel discussion of the findings it was emphasized that psychiatry is an extremely diverse field both in its training and its practice. Among practicing psychiatrists significant numbers provide only inpatient care whereas others work only in ambulatory settings. Residency programs are similarly more diverse than typically encountered in specialty training. There are a variety of fundamental models that may be used and a given program can vary from predominantly somatic to predominantly nonsomatic. This heterogeneity can complicate any comparative evaluation of training and subsequent practice based on cross-sectional specialty averages. Similar profiles across the training and practice do not guarantee similar experiences for any given resident or physician.

TABLE 11

PSYCHIATRY

DIAGNOSTIC AND PROCEDURAL FOCUS:

COMPARISON OF GRADUATE MEDICAL EDUCATION AND CURRENT PRACTICE BASED ON USE OF DIAGNOSTIC AND THERAPEUTIC PROCEDURES

ENCOUNTERS INVOLVING:	GRADUATE MEDICAL EDUCATION RESIDENT SAMPLE	1978 PRACTICE PHYSICIAN SAMPLE
	% OF ENCOUNTERS ALL LOCATIONS ALL AGES	
	(INPATIENT IN PARENS)	
	CATEGORIES ARE NOT MUTUALLY EXCLUSIVE SO %s SUM TO GREATER THAN 100%	
Psychotherapy	40.6 (42.4)	** 54.5 (70.2) **
Chemotherapy	19.3 (20.6)	** 25.8 (30.6) **
Neurological diagnostic tests	11.9 (18.0)	* 7.8 (16.4) ns
Other Medical diagnostic tests	24.1 (32.8)	** 9.7 (19.6) **
Any somatic diagnostic/therapeutic procedure	38.6 (47.6)	ns 34.3 (51.3) ns
BASED ON:	643 encounters over 52 physicians	11402 encounters over 643 physicians

LEGEND:

* = Significant difference (.05 level) between resident and physician sample

** = Significant difference (.01 level) between resident and physician sample

ns = No significant difference found

Other special factors in Psychiatry complicating the interpretation of findings were the large number of self-designated psychiatrists in the field who had not received residency training in Psychiatry (see Appendix A-2 for a discussion) and the rapid evolution occurring in Psychiatry in recent years, arising from changes in the understanding and treatment of mental disorders as well as changes in program funding and physician reimbursement.

With these caveats in mind, panel members discussed the implications of the findings for Psychiatry. Several trends appeared to be of particular substantive interest and were presented to the panel for comment. The first concerned the increased emphasis projected for 1990 (see Table 8), on the treatment of psychoses, (both in the outpatient and inpatient setting), along with the decreased emphasis on the treatment of neuroses and other nonpsychotic disorders. The treatment of psychoses is projected to comprise well over half of the adult psychiatric care delivered by psychiatrists, as opposed to the approximately 30% of time which the USC data indicate are now spent by residents and practicing physicians. This projection was felt to be accurate by panel members. Traditionally, there has been a heavy involvement of Psychiatry in the treatment of neuroses and other nonpsychotic disorders. However, because of changes in funding and in the reimbursement structure, the changing role of nonphysician providers, (who are competing with psychiatrists in the treatment of the less seriously ill) and breakthroughs in the understanding and treatment of major disorders, Psychiatry is seen as concentrating more and more on treatment of the seriously ill. Psychiatry is, in fact, moving very rapidly in this direction and it was felt that the USC data -- having been collected over five years ago -- fail to reflect the great changes that have already taken place in both training and practice and therefore overrepresent the divergence between current trends and those projected for 1990. No particular need was seen, therefore, for changes in residency training which was already felt to be responding to the new environment (the lesser emphasis on neuroses and the nonpsychotic disorders among residents than practicing physicians being one example of the responsiveness of GME to changing requirements).

Another striking difference between the profiles of residents and those for current and 1990 normative practice is the amount of purely nonpsychiatric medical care given. This was reflected in the high proportion of residents' patient encounters involving nonpsychiatric, medical conditions (14%) and the use of purely medical diagnostic tests in a large percentage of encounters (24%). Only 4% of the encounters of practicing physicians, on the other hand, involved nonpsychiatric or nonneurological conditions and medical diagnostic tests were used in only 10% of the encounters. At the furthest extreme are the GMENAC profiles which do not project any need requirement at all in Psychiatry for nonpsychiatric care.

The greater exposure to medical and surgical patients during residency training was considered to be a very positive finding by panel members, exemplifying the notion that a perfect correspondence between training and practice profiles is not always optimum. It was noted that the additional exposure to general medicine during residency training provides appropriate grounding in basic biological principles that will be needed in subsequent practice, regardless of the specific types of conditions treated. The high proportion of such care indicates that Psychiatry is succeeding in providing diverse experiences necessary to round out the psychiatric training of residents.

The GMENAC projection that no medical, nonpsychiatric care will be delivered by Psychiatrists in 1990 was also questioned. It was noted that there is an irreducible minimum of primary care provided by Psychiatrists, particularly to institutionalized patients. This component will no doubt remain small, but should be taken into account in estimating the needs requirements of Psychiatry.

Another particularly striking divergence between GME current and 1990 practice profiles was the component of care devoted to child and adolescent psychiatry. As noted, practicing physicians appear to spend significantly less time in the treatment of children and adolescents than residents (4% versus 9%) and far less than that projected by GMENAC for 1990 (11%). The greater amount of residency training time devoted to the care of children was considered appropriate and desirable despite the small amount of care provided this population in subsequent practice. The relative lack of attention to children

in the practices of General Psychiatrists was considered to reflect a substantial degree of unmet need in the psychiatric care of this portion of the population. GMENAC projections forecasting a need for additional care of children by General Psychiatrists were felt to be essentially accurate in terms of the levels of care which are required for adequate treatment of psychiatric needs of children.

Current social and economic barriers to care appear to have constrained the amount of child psychiatric care delivered by both General and Child Psychiatrists. This is particularly the case for care required for preventive purposes or early intervention. It was felt that care delivered by practicing psychiatrists tends to be for more serious problems that demonstrably require attention. This accounts for the observed differences in the location of child care which, as noted, residents tend to deliver in ambulatory settings and practicing physicians in inpatient settings. The latter was felt by panel members to be comprised primarily of care delivered to hospitalized adolescents.

Part of the unmet need with respect to the psychiatric care of children was considered not simply a social/economic problem but a supply problem arising from the structure of the experience during training. This was true despite the fact that the data show residents spending substantial amounts of time with child and adolescent patients. It was felt that the present data may overstate training in the substantive and unique aspects of child psychiatry due to the inclusion of adolescents in the statistics. Furthermore, a high degree of exposure to child and adolescent patients does not necessarily guarantee that a meaningful training experience is being attained, i.e. through contact of residents with faculty especially qualified in child psychiatry. Appropriately trained academic child psychiatrists were felt to be in short supply, thereby exacerbating the problem of an unmet need in the psychiatric care of children and adolescents.

2. Ambulatory Versus Inpatient Emphasis in Psychiatry

Table 12 presents the summary indices describing the ambulatory versus inpatient focus of training, current, and 1990 normative practice. Although the trend is not clear cut, there appears to be a somewhat greater inpatient emphasis in training than in practice. According to ACGME data, time is about

TABLE 12

PSYCHIATRY

AMBULATORY VERSUS INPATIENT FOCUS:
COMPARISON OF GRADUATE MEDICAL EDUCATION, CURRENT PRACTICE
AND 1990 NORMATIVE PRACTICE

INDICATOR	GRADUATE MEDICAL EDUCATION PROGRAM DATA	1978 PRACTICE (n=52)	1978 PRACTICE PHYSICIAN SAMPLE (n=645)	1990 NORMATIVE GMENAC
1) PERCENT TIME IN AMBULATORY VERSUS INPATIENT SETTINGS:	Average months in Outpatient Psychiatry rotations:[1] 16.7 Average months in Inpatient Psychiatry rotations:[1] 12.5 % time in Outpatient Psychiatry rotations: 57.1%	Hours per day in Outpatient care:[2] 4.1 Hours per day in Inpatient care:[2] 1.3 % time in Outpatient settings: 75.9%	Hours per day in Outpatient care:[2] 5.2 Hours per day in Inpatient care:[2] 1.7 % time in Outpatient settings: 75.4%ns	Time units per 100,000 in Outpatient settings:[3] 88612 Time units per 100,000 in Inpatient settings:[3] 49216 % time in Outpatient settings: 64.3% a,b
2) AMBULATORY VERSUS INPATIENT LOAD:	Total Outpatients over 3 years:[4] 201 Total Inpatients over 3 years:[4] 216 % Outpatients over total patients: 48.5%			Patients per 100,000 seen in Outpatient settings:[5] 3456 Patients per 100,000 seen in Inpatient settings:[5] 1052 % Outpatients over total patients: 76.7% c
3) AMBULATORY VERSUS INPATIENT ENCOUNTERS:	NA	Total weekly Outpatient encounters:[6] 16.3 Total weekly Inpatient encounters:[6] 15.4 % Outpatient to total encounters: 51.4%	Total weekly Outpatient encounters:[6] 27.7 Total weekly Inpatient encounters:[6] 18.4 % Outpatient to total encounters: 60.1%**	NA

[1]Abstracted from narrative description of rotational curriculum from the ACGME questionnaire, item VIII (p. 9).

[2]Taken from the Activity Overview section of the USC instrument. Inpatient and outpatient codes are defined in Chapter 2.

[3]Taken from Tables 5 and 6, OGME: Physician Requirements - 1990 for Psychiatry. (Patients per 100,000 in a given setting in Table 5 were multiplied by annual Psychiatrist time requirements per patient in Table 6). For comparison with USC data which has only inpatient and ambulatory settings, ambulatory settings were defined as "ambulatory" and "partial hospitalization" and hospital settings were defined as "acute hospitalization" and "24-hour institution."

[4]Taken from the ACGME questionnaire item G (p. 6) which lists total outpatients and total inpatients treated. per resident in each year of residency.

[5]Taken from Table 5, OGME, Physician Requirements - 1990 for Psychiatry.

[6]Taken from the Week's Practice Summary of the USC instrument.

LEGEND:

** = Significant difference (.01 level) between resident and physician sample

a = Significant difference (.01 level) between physician sample and GMENAC

b = Significant difference (.01 level) between resident sample and GMENAC

c = Significantly different (.01 level) from program data

ns = No significant difference found

evenly divided between inpatient and outpatient psychiatry rotations. The USC weekly encounter data similarly show residents with 50% of their encounters in ambulatory settings compared to 60% for practicing physicians. The USC time data, however, indicate that for both residents and practicing physicians 75% of total patient care time is spent in ambulatory settings.

Compared to current practice, GMENAC projects a greater emphasis on inpatient care, indicating that the percentage of psychiatrists' time spent in outpatient settings will drop from 75% to 64%. At the same time, however, the proportion of outpatients to inpatients is projected to increase. This reflects a markedly different trend with respect to "time intensity" in the two settings projected for the year 1990. Whereas Psychiatrists have traditionally had longer encounters with their ambulatory (and primarily nonpsychotic) patients, GMENAC projects an increase in the average amount of time spent per inpatient and a corresponding decrease in the time intensity for outpatients.

The latter trend was felt to be a function of the changing diagnostic focus in Psychiatry which, as discussed previously, is moving toward an increased emphasis on the psychoses and major mental disorders. These illnesses, particularly in their acute forms, require more time per patient regardless of setting, a fact which is in accordance with the increased time intensity projected by GMENAC. Again it was felt that Psychiatry is moving rapidly in the direction projected by GMENAC, a fact not reflected in the five year old USC data.

3. Emphasis on Teaching, Research, and Administration in Psychiatry

Table 13 presents summary indices on the teaching, research, and administrative emphasis in Psychiatry. As can be seen in row 1, almost all programs provide some experience in all three areas. Given the large administrative component of psychiatric practice, it is interesting that administrative experience is required in fully 41% of the programs. According to the 1978 AADPRT survey the way this experience is obtained varies across programs. In 34% of the programs, the experience was obtained as Chief Resident on an inpatient unit, in 33% as Chief Resident in a department, in 27% as Chief Resident of multi-disciplinary treatment, in 38% as supervisor of a

TABLE 13

PSYCHIATRY

EMPHASIS ON TEACHING, RESEARCH, AND ADMINISTRATION:
COMPARISON OF GRADUATE MEDICAL EDUCATION, CURRENT PRACTICE, AND 1990 NORMATIVE PRACTICE

INDICATOR	GRADUATE MEDICAL EDUCATION PROGRAM DATA	GRADUATE MEDICAL EDUCATION RESIDENT SAMPLE (n=52)	1978 PRACTICE PHYSICIAN SAMPLE (n=645)	1990 NORMATIVE GMENAC
1) PHYSICIANS WITH ANY TEACHING, RESEARCH, OR ADMINISTRATION (TRA):	% Residents with any TRA: % with required teaching:[1] 52% % with some teaching:[1] 75% % with required research:[2] 2% % with some research:[3] 50 to 80% % with required administration:[4] 41% % with some administration:[4] 85%	% Residents with any TRA codes in a 3-day period LOWER BOUND ESTIMATE[5] 76.9% ns % with any teaching: 53.8% % with any research: 19.2% % with any patient-related administration: 15.4% % with any management/ administration: 53.8%	% Physicians with any TRA codes in a 3-day period (LOWER BOUND ESTIMATE)[5] 72.2% ns % with any teaching: 36.7% % with any research: 14.1% % with any patient-related administration: 22.3% % with any management/ administration: 57.1%	NA
2) PERCENT OF TIME IN TEACHING, RESEARCH, AND ADMINISTRATION:	NA	Percent time in:[6] Teaching: 10.2% Research: 2.1% Patient Care Administration: 1.2% Management: 7.4% TRA total: 20.9% Direct Patient Care: 49.2%	Percent time in:[6] Teaching: 6.8% Research: 2.8% Patient Care Administration: 2.5% Management 6.7% TRA total: 18.8% ns Direct Patient Care: 64.0% *	Hours per week in TRA: NA Hours per week in DPC: 33.6
3) PHYSICIANS WITH MAJOR TEACHING, RESEARCH, AND ADMINISTRATION:	% Residents with major TRA training: NA % with major research:[7] 33.2%	% Residents with major TRA training:[8] 23.4%	% Physicians with full-time TRA training:[9] 11-19%	NA

See Reverse Side for Footnotes and Legend.

FOOTNOTES:

[1]Coded from the ACGME questionnaire, item F, page 7 (To what extent do residents engage in teaching? Specify:)

[2]Coded from the ACGME questionnaire, item F, page 6 (Describe research programs including facilities, supervisors, and required or elective opportunities for the residents. If elective, how many residents are involved?)

[3]Taken from the AADPRT survey (1973) which shows the following distribution of activities available (but not required) in Psychiatry residencies:

Assignment to research ward:	39%
Participation in faculty research:	88%
Research seminar:	49%
Statistics course:	37%
Separate research training track:	29%
Six month to one year period residents can devote to research:	61%
Research preceptors for every resident faculty:	49%

[4]Taken from the 1978 AADPRT survey.

[5]Taken from Activity Overview of USC survey instrument.

[6]Taken from Activity Overview of USC survey instrument. Direct Patient includes three-fourths of time spent in consultation (as in GMENAC estimates for DPC time).

[7]Taken from the 1977 AADPRT survey which shows 30.4% of the residents in "active research" in PGY-1; 21.8% in PGY-2, 34.7% in PGY-3, and 45.7% in PGY-4. Average across all four years is 33.2%.

[8]Taken from the Activity Overview section. Defined as any resident spending one-third or more of his professional time in teaching, research, or administration activities.

[9]Taken from the AMA survey of 1977.

LEGEND:

* = Significant difference (.05 level) between resident and physician sample

ns = No significant difference found

non-psychiatric staff. In 13% of the programs, experience was provided in supervised community agency administration.

Row 1 of Table 13 also shows that some research experience is provided in at least 80% of the programs. The variety of experiences provided, however, makes it difficult to quantify and compare teaching, research, and administration experiences across different settings. As shown in footnote 3, available research opportunities vary from participation in faculty research (88% of the programs) to a separate research training track (29% of the programs). The ACGME questionnaires indicate, however, that only 2% of the programs have required experience in research. This is supported by the AADPRT survey which found that 3% of the programs have required participation in ongoing faculty research, while 1% have required resident-initiated clinical research.

Row 2 of Table 13 shows a large TRA component for both residents and practicing psychiatrists (approximately 20% in both cases). As expected, management-oriented administrative experiences comprise a large part of this. Although GMENAC does not project what percentage of time will be spent in TRA versus direct patient care activities in 1990, the projected DPC hours are in close approximation to those for USC residents and physicians. Given a 50 hour work week, the GMENAC projected figure of 33.6 hours in DPC per week suggests that 67% of time will be spent in direct patient care, a figure which is equivalent to that found among currently practicing physicians.

As noted, Table 13 indicates the administrative component of Psychiatry to be substantial, especially compared to other specialties. This was felt to be at least partially due to the increase in adminstrative requirements associated with the team model used in the practice of Psychiatry. Although administration is one of the largest TRA demands on practicing Psychiatrists, panel members did not perceive there to be any deficits in training in this area. If anything, Psychiatry was felt to be moving away from such a heavily administrative orientation as the administrative functions in public settings are increasingly taken over by business managers.

The area of greatest need was seen instead as that of research. The field of Psychiatry is currently experiencing a rapid expansion of its base of knowledge, particularly in the neurosciences. To take advantage of the potential for further development in this area a strong commitment to academic research is needed not only to the basic sciences but in the clinical realm as well. With only 2% of programs requiring research, this orientation appears to be lacking. Several factors were seen as contributing to this lack of emphasis on the training of researchers. The commitment to academic research in Psychiatry has not been strong historically. In addition, half the residency slots in Psychiatry are in unaffiliated or free-standing institutions without in-hospital exposure to other specialties, a fact which has tended to diminish research opportunities.

There are also many factors cutting across specialties which tend to discourage research. There is currently less financial support available for research, requiring residents to spend more time filling service demands at the expense of research activities. In addition, large numbers of academically qualified physicians are now practicing outside of academic health centers so that fewer research patients are available. Regardless of cause, the lack of research slots during residency training was seen as a serious problem with respect to current and future requirements in this area.

4. Use of Nonphysician Providers in Psychiatry

Table 14 presents the summary statistics on the use of nonphysician providers in Psychiatry for both training and practice. As can be seen in rows 1 and 2 the availability of NPPs is similar for residency training and practice (as indicated by both the NPP-to-resident ratios and the percentage of practices with NPPs). Residents and practicing physicians also seem to delegate the same proportion of visits (about 13%) and to refer the same number of encounters to NPPs (about 5%). The average number of cases referred to NPPs in Psychiatry is relatively high which serves to illustrate the different type of relationship which holds among physicians and NPPs in Psychiatry than in other specialties.

TABLE 14

PSYCHIATRY

USE OF NONPHYSICIAN PROVIDERS: COMPARISON OF GRADUATE MEDICAL EDUCATION, CURRENT PRACTICE, 1990 NORMATIVE PRACTICE

INDICATOR	GRADUATE MEDICAL EDUCATION		1978 PRACTICE	1990 NORMATIVE
	PROGRAM DATA	RESIDENT SAMPLE	PHYSICIAN SAMPLE	GMENAC
1) NPP-TO-PHYSICIAN RATIO:	NPP-to-Resident ratio:[1] Social/Behavioral Scientists: 1.4 Other aides: 1.3	NPP-to-Resident ratio:[2] Social/Behavioral Scientists: 1:1.1 Other aides: 1:1.1	NPP-to-Physician ratio:[2] Social/Behavioral Scientists: 1:1.7 ns Other aides: 1:1.6 ns	N/A
2) AVAILABILITY OF NPP's WITHIN THE PROGRAM/ PRACTICE:	% programs with:[1] Social/Behavioral Scientists: 95.8% Other aides: 100.0%	% practices with:[2] Social/Behavioral Scientists: 57.1% Other aides: 57.1%	% practices with:[2] Social/Behavioral Scientists: 52.3% ns Other aides: 62.9% ns	N/A
3) PERCENT OF VISTS DELEGATED:	N/A	% of total practice visits to other staff only:[3] 13.7%	% of total practice visits to other staff only:[3] 13.3% ns	N/A
4) PERCENT OF ENCOUNTERS REFERRED TO NPP's	N/A	% of encounters referred to:[4] Social/Behavioral Scientists: 2.0% Other aides: 3.1%	% of encounters referred to:[4] Social/Behavioral Scientists: 0.8% ns Other aides: 4.3% ns	N/A

See Reverse Side for Footnotes and Legend.

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FOOTNOTES:

[1] Taken from page 3 of the ACGME listing Other Professional Staff (behavioral scientists, psychologists, anthropologists, sociologists, psychiatric nurses, social workers, physiologist, research personnel). Social/behavioral scientists were defined as behavioral scientists, psychologists, anthropologists, and social workers. Other aides were defined as psychiatric nurses and social workers.

[2] Taken from Item G of the Questionnaire section of the USC instrument. Social/behavioral scientists was defined as Psychologist. Other aides were defined as Social Worker, Psychiatric Nurse, and Other Registered Nurse. Ratios were obtained by dividing total FTEs in these categories into total FTEs for Psychiatrist and Other physician in the Practice.

[3] Taken from the Week's Practice Summary. Calculated as the percentage of visits to "Other Staff Only" over total vists to the practice (i.e., visits to the physician plus visits to other staff only).

[4] Taken from the Referral/Consultation item of the Patient Encounter section of the USC instrument. Referral to a social/behavioral scientist was defined by code 11 (Psychologist) and referral to other aides was defined as codes 12, 13, and 14 (Social worker, Psychiatric Nurse, and Phsyciain extender).

LEGEND:

ns = No significant difference found

Whether the exposure to and use of NPPs presently evident will continue into the future was considered difficult to judge by panel members. The number of nonphysician providers is still growing but the exact role they will play is unclear and furthermore is being decided by public policy formed outside of medicine. The trend may, therefore, be toward increased independence rather than collaboration between psychiatrists and NPPs.

Nevertheless, the interdependent team approach has been strongly embedded in both the training and practice model, and has and will continue to alter the pattern of care provided by psychiatrists. As a solo enterprise, Psychiatry has been highly labor intensive with respect to the Psychiatrists' input. Greater productivity and less time intensity may occur because of increased opportunities for delegation. The GMENAC projections do appear to assume rather different patterns of care than currently evident which may be based on assumptions about changing delegation patterns. However, since these assumptions were not specified, it's difficult to evaluate whether or not current trends are consonant with these expectations.

C. THE RELATIONSHIP BETWEEN GRADUATE MEDICAL EDUCATION AND PRACTICE PROFILES IN OBSTETRICS/GYNECOLOGY

Obstetrics/Gynecology is a field which focuses primarily on the provision of delivery, family planning, and gynecological services for women in their childbearing years and beyond. As such, OB/GYN presents a unique specialty profile in that it focuses on a single body system, yet serves as the principal point of contact with the health care system for a large number of women of child-bearing age. USC data show that in many ways, these specialists exhibit a primary-care practice profile. They have high productivity, averaging 115.6 patient encounters per week, 70% of which are ambulatory (Mendenhall et al, 1977). Eighty-one percent of their patients are self-referred, and consultations account for just one and one half percent of their practices. Well-patient care (exclusive of prenatal care and various categories of follow-up visits) accounts for approximately 1 of every 4 ambulatory visits.

On the other hand, unlike other primary care specialists, OB/GYN specialists devote as much of their day to hospital care as to office visits. In addition, "primary care" type ailments such as upper respiratory infections and back pains which are quite frequent in the ambulatory practices of general

and family practitioners, account for insignificant proportions (less than one half of one percent) of the ambulatory practices of Obstetrician/Gynecologists.

From the medical educator's viewpoint, obstetrics/gynecology appears to occupy a complex status with regard to the primary-secondary care continuum, and training must, therefore, stress both aspects of care. As stated in A Design for Resident Education in Obstetrics and Gynecology (CREOG, 1981) the goal of residency training in OB/GYN is to produce a specialist who "...can serve as a consultant to other physicians, furnish effective health maintenance, serve women as their primary entree into the health care systems, and meet the needs of patients with unanticipated or complicated obstetric or gynecologic problems."

To acquire the skills for handling complicated obstetrical and gynecological problems, residents should receive training not only in general gynecology and obstetrics but should receive significant experience in the subspecialty areas of OB/GYN, namely Reproductive Endocrinology, Maternal-Fetal Medicine (High Risk Obstetrics), and Gynecologic Oncology. Experience in Pathology is also required.

As a specialty, OB/GYN has a large surgical component, (amounting to almost 20% of total professional time) so that training in OB/GYN should promote mastery of the following surgical skills (CREOG; 1981, p. 24):

- evaluation of abdominal contents by exploration
- major abdominal and vaginal surgical procedures upon the female genitalia
- endoscopic procedures in the pelvis
- diagnostic evaluation by electronic monitoring, ultrasound, amniocentesis, and other methods
- spontaneous and operative deliveries
- diagnosis and surgical management of complications of all of the above

In addition to above content areas, however, residency training in OB/GYN should provide residents with organized experience in the provision of "principal" care: "This principal preventive and therapeutic care is becoming an increasingly well-defined part of the discipline, and the program director should give careful thought to providing opportunities for residents to prepare for this role... In order to meet the objectives, acceptance of the principal care role must be pervasive throughout the program" (CREOG; 1981, p.13).

1. Diagnostic and Procedural Focus in Obstetrics/Gynecology

Table 15 presents the percentage of time spent treating various conditions by residents and practicing physicians, as well as the percentage of time projected by GMENAC for 1990. When examining the profiles of USC residents and practicing physicians, it appears that residents spend a somewhat larger proportion of their time in performing deliveries, both normal (22% versus 14%) and complicated (5% versus 2%). They also appear to spend somewhat more time performing procedures (12% of resident time is spent performing major gynecological procedures and 5% obstetric procedures compared with 9% and 3% for practicing physicians). Residents, however, spend correspondingly less time in providing well care and family planning. For residents a total of 5.6% of time is spent in these activities whereas 19.2% is spent by practicing physicians. Residents also appear to spend more time in emergency care than practicing physicians (12% versus 7%).

That residents spend such a small proportion of their time delivering well care compared to practicing physicians was considered a positive indication by panel members. Well care is relatively simple to provide and the principles easy to learn compared to other content areas in Obstetrics/Gynecology. It is appropriate, therefore, that the amount of well care delivered should occupy less time than in subsequent practice. If, in fact, well care were to occupy the same percentage of time during training as in subsequent practice, it would be to the detriment of other experiences.

The greater amount of time spent in surgery during residency training than in subsequent practice was also considered a positive indication, since surgery is a technically complex skill requiring a critical level of training regardless of the amount of surgery performed in subsequent practice. Panelists expressed

TABLE 15

OBSTETRICS/GYNECOLOGY

DIAGNOSTIC AND PROCEDURAL FOCUS:

COMPARISON OF GRADUATE MEDICAL EDUCATION, CURRENT PRACTICE, AND 1990 NORMATIVE PRACTICE USING GMENAC PATIENT CARE CATEGORIES

	GRADUATE MEDICAL EDUCATION RESIDENT SAMPLE % of time	1976 PRACTICE PHYSICIAN SAMPLE % of time	1990 NORMATIVE GMENAC % of time
	not mutually exclusive: % of time will be > 100%		
Ambulatory (excluding OB)			
GMENAC Conditions			
Infectious & Parasitic Diseases	.9	1.5	1.7
Neoplasms			
Malignant	.4	.6	.8
Other	.8	.7	.1
Endocrine Disorders	.04	.7	0.0
Diseases of the Genitourinary System			
Sterility, Disorders of Menstruation, Menopause	3.6	6.7*	3.0 a
Other	4.4	7.6	8.1 b
Complications of Pregnancy			
Abortions, Complications of Puerperium (for other complicated OB see Obstetrics)	0.2	0.0	1.5
Symptoms and Ill-defined Conditions	2.1	1.2	0.1
Exams w/o Sickness			
Well Care	4.2	14.8**	4.5 a
Family Planning	1.4	4.4*	1.9 a
Counseling	1.1	2.7	0.2
Other	0.5	0.9	0.0
Other Ambulatory Care			
Hypertension, Colds, and Abdominal Symptoms	.8	.4	.2
Other	2.0	2.8	0.0

TABLE 15 (CONT'D)

	GRADUATE MEDICAL EDUCATION RESIDENT SAMPLE % of time	1976 PRACTICE PHYSICIAN SAMPLE % of time	1990 NORMATIVE GMENAC % of time
Obstetrics			
Deliveries (excluding C-section)			
Complicated	5.4	1.5	19.3 a,b
Normal	22.4	13.8 **	
Ante/Post-partum care			
High risk	1.8	1.1	3.5
Other	15.3	20.4 **	16.1 a
Hospital, Nonsurgical			
GMENAC Conditions	.4	.2	4.4 a,b
Other	.6	.4	0.0
Hospital, Surgical			
Pre/Post Operative Visits			
Inpatient	8.5	5.2 *	15.9 a,b
Outpatient	2.3	3.7	4.6
Major Gynecological Procedures	12.3	8.7 **	18.2 a,b
Minor Gynecolcgical Procedures	1.6	2.1	3.3
Obstetric Procedures	4.8	2.6 *	1.6 b
Other Procedures	1.0	0.7	0.0
Other Types/Dimensions of Care			
Newborn Care	1.8	.6	0.0
Other Pediatric Care	3.6	1.9 ns	0.0 a
Male Adults	1.3	1.0	0.0
Emergency Care	11.8	6.7 **	N/A
Regular Patient	54.1	79.7 **	N/A
BASED ON:	1926 encounters over 79 residents	33688 encounters over 804 physicians	

LEGEND:

* = Significant difference (.05 level) between resident and physician sample

** = Significant difference (.01 level) between resident and physician sample

a = Significant difference (.01 level) between physician sample and GMENAC

b = Significant difference (.01 level) between resident sample and GMENAC

ns = No significant difference found

concern, in fact, that residents in OB/GYN should receive even more surgical training than they now receive. Exposure to surgical training was felt to be particularly threatened by the shift in the volume of patients from university-based teaching hospitals to community medical centers.

Of further interest in Table 15 is the percentage of regular patients seen by residents versus practicing physicians. Although the figure is substantially higher for practicing physicians than residents (80% versus 54%) regular patients still account for a significant proportion of residents' time. It, therefore, appears that OB/GYN residency programs are able to provide opportunities for residents in the area of principal care. (This measure, however, includes routine obstetric care and does not indicate the percentage of routine care administered to gynecological patients, which provides a better indication of the primary care component of practice.)

When comparing GME and current practice with 1990 normative practice, the major difference in Table 21 appears to be that GMENAC projects substantially more time spent in surgical care even though the surgery rate itself is projected to fall. This difference occurs both for time spent in performing procedures and in delivering pre- and post-operative care. Pre- and post-op visits together are projected to occupy over 20% of the specialists' time in 1990 (compared to 11% for residents and 9% for practicing physicians) while procedures account for 23% of time (compared to 20% and 14.1%). The amount of time projected for family planning and well care, on the other hand, is correspondingly lower than that currently spent by practicing physicians (6% versus 19%). It nevertheless corresponds closely to the proportion of time currently spent by residents (7%). GMENAC also projects significantly more time for hospital nonsurgical care (4.4%) than currently spent by residents (1.0%) or practicing physicians (0.6%).

Panelists felt that the proportion of well care and family planning visits projected by GMENAC for 1990 was artificially low. Part of the under-enumeration was felt to be due to the large numbers of family planning and well care visits that GMENAC projected would be delegated to nonphysician providers (15% for well care). This delegation rate was felt to be high given the current supply of nonphysician providers. In addition, the norms of care used by GMENAC in their projections for well care were based on the model of the American

Cancer Society, which recommended a substantially lower rate for preventive gynecologic exams than gynecologists on the panel felt should occur.

The projected increase in 1990 for time devoted to surgery was felt to be an artifactual result from this decision by GMENAC to shift substantial portions of ambulatory care (especially well care) from the physician himself to the nonphysician provider. Since it was not felt that this change is likely to occur, physicians themselves, rather than their nonphysician staff, will be delivering more well care, reducing the overall proportion of time spent in surgical care. Nevertheless, this component of OB/GYN will remain high, warranting a continued strong emphasis in residency training. The 1990 estimates for nonhospital surgical care was similarly felt to be artificially high because of GMENAC's assumptions about delegation patterns. In addition, it was noted that the USC data tend to underenumerate hospital nonsurgical care by classifying many complications of pregnancy as pre- or post-partum care. Consequently, no concern for increased training in this area was felt by panel members.

Table 16 presents time spent in various rotations (taken from the ACGME questionnaire) compared with USC and GMENAC data collapsed into similar categories. According to the ACGME data, residents spend approximately 46% of their time in gynecological rotations of which 2% were specifically labeled as Endocrinology/Infertility and 11% as Oncology, Radiology, or Pathology. (Time spent in radiology or pathology was added to that spent in oncology to obtain total percent of time in rotations related to the diagnosis and treatment of neoplasms.)

Residents spend 39% of their time in obstetrical rotations of which approximately 1% was specifically mentioned as high risk or maternal/fetal, 5% as labor and delivery and 4% as postpartum or ambulatory obstetric care. Three percent of rotational time was spent in General Surgery, 2% in Neonatology, 6% in General Medicine and 1% in Emergency Care.

Examination of the second column, which presents measures of resident experience taken from the USC practice profiles survey, shows that there is a great deal of specific experience being obtained during residency training that is not captured in the general terms used to describe rotational assignments.

TABLE 16

OBSTETRICS/GYNECOLOGY

DIAGNOSTIC AND PROCEDURAL FOCUS:

COMPARISON OF GRADUATE MEDICAL EDUCATION, CURRENT PRACTICE, AND 1990 NORMATIVE PRACTICE USING ROTATIONS

	GRADUATE MEDICAL EDUCATION		1976 PRACTICE	1990 NORMATIVE
	Program data % time in rotation	Resident Sample % of time	Physician Sample % of time	GMENAC projections % of time
Gynecological, Total	46.3	30.5	47.9 **	48.9 b
Endocrinology, Infertility, Specifically Mentioned	2.3	5.6	7.2 *	3.0 a
Oncology, Radiology, Pathology, Specifically Mentioned	10.9	1.3	.9	0.8
Gynecological, NOS	33.1	25.6	39.8 **	45.1 a,b
Obstetrical, Total	39.2	44.8	35.8 **	41.9 a
High risk OB/Maternal Fetal, Specifically Mentioned	1.1	7.2	2.6 **	3.5 b
Labor and Delivery, Specifically Mentioned	4.9	22.3	13.8 **	19.3 a,b
Post-partum, Ambulatory Obstetric, Specifically Mentioned	4.1	15.3	20.4 **	16.1 a
Obstetrical, NOS	29.1	-	-	-
Other				
Surgery, Anesthesia, Specifically Mentioned	3.2	19.7	14.0 **	23.2 a,b
Neonatology	1.7	1.8	.6	0.0
General Medicine	5.9	3.3	3.8	0.3
Emergency Room	1.4	3.8	6.7 *	N/A
BASED ON:	104 programs	1926 encounters over 79 residents	33688 encounters over 804 physicians	

For example, although time spent in general surgery rotations is low, it is clear that residents receive significant surgical experience elsewhere during residency training -- spending 20% of their time in performing surgeries, (compared with 14% for practicing physicians). As noted previously, residents also appear to perform more deliveries than practicing physicians and spend more time in high risk obstetrics (defined here as the percentage of time spent in complicated deliveries and high risk pre/post-partum care). On the other hand, residents, tend to spend less time with endocrinology/infertility problems than practicing physicians (4% versus 7%) and spend only 2% of their time in formally defined rotations in this area. It is interesting to note that in a 1978 survey of OB/GYN residents (Eskew and Watt, 1981) training in high risk obstetrics was rated poor only 5% of the time, whereas training in endocrinology was rated poor 51% of the time and infertility 47% of the time.

Panel members expressed concern over the apparent deficit of training experience in the area of endocrinology and infertility. This was seen as a rapidly expanding science for which there is a substantial need for increased training. Although GMENAC projects lowered requirements in this area for 1990 (3% in 1990 versus 7% currently), this was felt to be a definite underestimate. With the aging population there are greater numbers of older women attempting to have children and more post-menopausal women experiencing endocrinologically-related problems such as osteoporosis. It was, therefore, felt that providing more experience in this area was a high priority for residency training in Obstetrics/Gynecology.

Although malignancies account for approximately 1% of the practices of residents and practicing physicians (as well as the projected practices of OB/GYN specialists in 1990), training in oncology, radiology, and pathology accounted for 10% of the rotational time. This was not considered unwarranted given the seriousness of the condition and the complexities involved in its diagnosis and treatment.

2. Ambulatory Versus Inpatient Emphasis in Obstetrics/Gynecology

Table 17 presents the various indices for ambulatory versus inpatient focus in OB/GYN. An examination of the time spent in outpatient settings shows that residency training is somewhat more inpatient-oriented than current practice. Residents spend approximately 60% of their time in inpatient encounters compared to 44% for currently practicing physicians. GMENAC projections for 1990, however, are more similar to those found in training in that over half (55%) of patient care time is spent in inpatient settings.

The percentage of encounters in outpatient settings (row 3) shows the opposite trend. For residents about half the encounters (47%) are outpatient encounters. For current and 1990 normative practice this number is about 69%. The percent of outpatient encounters to inpatient admissions is also indicative of this, showing a much higher ratio during training than for 1990 normative practice. Thus, it appears that the 1990 projections assume more time intensity for in-patient encounters in 1990 (about 20% more time per encounter) than presently found in training or in practice.

3. Emphasis on Teaching, Research, and Administration in Obstetrics/Gynecology

Table 18 presents the summary statistics for OB/GYN with respect to teaching, research, and administrative experiences. As can be seen, no ACGME or other program data was available for OB/GYN on this subject. USC resident data indicate, however, that at least 47% percent of residents perform some teaching, 4% perform research, 32% patient-related administration, and 25% management-oriented administration. As can be seen in row 2 residents spend approximately 13% of their time in TRA activities compared to 11% for practicing physicians.

This difference is accounted for mostly by the higher percentage of resident's time devoted to teaching activities (7% versus 4%). This was considered to be a totally different type of teaching than that performed by practicing physicians (in that residents are primarily involved in supervising other residents and medical students rather than formal instruction). As such, it does not indicate any great divergence between training and subsequent practice demands.

TABLE 17

OBSTETRICS/GYNECOLOGY

AMBULATORY VERSUS INPATIENT FOCUS: COMPARISON OF GRADUATE MEDICAL EDUCATION, CURRENT PRACTICE AND 1990 NORMATIVE PRACTICE

INDICATOR	GRADUATE MEDICAL EDUCATION PROGRAM DATA	GRADUATE MEDICAL EDUCATION RESIDENT SAMPLE (n=79)	1976 PRACTICE PHYSICIAN SAMPLE (n=804)	1990 NORMATIVE GMENAC
1) PERCENT PATIENT TIME IN AMBULATORY VERSUS INPATIENT SETTINGS:	N/A	% time in Outpatient versus Inpatient Care:[1] Outpatient: 39.9% Inpatient: 60.1%	% time in Outpatient versus Inpatient care:[1] Outpatient: 55.7%** Inpatient: 44.3%**	% time in Outpatient versus Inpatient care:[2] Outpatient: 45.5% a Inpatient: 54.5% a
2) PERCENT AMBULATORY ENCOUNTERS VERSUS INPATIENT ADMISSIONS:	Yearly obstetric and gynecology Outpatient visits:[3] 24970 Yearly obstetric and gynecology Inpatient admissions:[3] 9110 Ratio of Inpatient admissions to Outpatient encounters: 1:2.7			Total Outpatient visit requirements for OB/GYN[4] (in 1000's): 67848 Total Inpatient admissions for OB/GYN[4] in (1000's): 6923 Ratio of Inpatient admissions to Outpatient encounters: 1:9.8 c
3) AMBULATORY VERSUS INPATIENT ENCOUNTERS	N/A	Weekly Outpatient encounters:[5] 41.0 Weekly Inpatient encounters:[5] 46.0 % Outpatient encounters: 47.1% **	Weekly Outpatient encounters:[5] 84.4 Weekly Inpatient encounters:[5] 16.9 % Outpatient encounters: 69.6% **	Total Outpatient visit requirements (in 1000's):[6] 67848 pre/post-partum 26467 post-op 7035 other 34345 Total Inpatient visit requirements (in 1000's):[6] 11116 deliveries, procedures 6017 post-op 15216 other 8883 % Outpatient encounters: 68.6% b

See Reverse Side for Footnotes.

FOOTNOTES:

[1]Taken from the Activity Overview section of the USC instrument. Inpatient and outpatient codes are defined in Chapter 2.

[2]Taken from the Productivity projections for OB/GYN (Table 23, OGME: Physician Requirements - 1990 for Obstetrics/Gynecology) which estimates that out of 29.0 DPC hours per week, 13.2 are spent in ambulatory settings and 15.8 in hospital settings.

[3]Taken from the ACGME questionnaire items 15 and 16 (Inpatient Obstetric and Gynecological Procedures) which gives total obstetrics and gynecological patients discharged per year and item 17 (Outpatient Services) which gives total yearly ambulatory obstetric and gynecologic visits.

[4]Taken from Tables 19, 20, 21 and 22 of OGME. Physician Requirements - 1990 for Obstetrics/Gynecology. The total number of ambulatory visits is 67,847,684, (34,345,328 for gynecological care, 26,467,286 for obstetrical care, and 7,035,044 for pre/post op care). 30,878,500 obstetrical visits were projected in all; the number occurring in the ambulatory setting as taken from Table 14 (p. 35). The number of inpatient discharges was taken from the incidence/prevalence projections summed over each diagnostic/procedural category and projected (if necessary) to the total population. This yielded 6,923,225 discharges in all: 6,016,882 for procedures or deliveries (after correcting for simultaneity) and 906,343 for nonsurgical care.

[5]Taken from the Week's Practice Summary of the USC instrument.

[6]Taken from Tables 19, 20, 21 and 22 of OGME: Physician Requirements - 1990 for Obstetrics/Gynecology. Each procedure or delivery was counted as one visit (comparable with the USC data) after correcting for simultaneity.

LEGEND:

** = Significant difference (.01 level) between resident and physician sample

a = Significant difference (.01 level) between physician sample and GMENAC

b = Significant difference (.01 level) between resident sample and GMENAC

c = Significantly different (.01 level) from program data

TABLE 18

OBSTETRICS/GYNECOLOGY

EMPHASIS ON TEACHING, RESEARCH AND ADMINISTRATION:
COMPARISON OF GRADUATE MEDICAL EDUCATION, CURRENT PRACTICE, AND 1990 NORMATIVE PRACTICE

INDICATOR	GRADUATE MEDICAL EDUCATION PROGRAM DATA	GRADUATE MEDICAL EDUCATION RESIDENT SAMPLE (n=79)	1976 PRACTICE PHYSICIAN SAMPLE (n=804)	1990 NORMATIVE GMENAC
1) PHYSICIANS WITH ANY TEACHING, RESEARCH, OR ADMINISTRATION (TRA):	% Residents with any TRA: % with required teaching: N/A % with some teaching: N/A % with required research: N/A % with some research[1] 62.5% % with required administration: N/A % with some administration: N/A	% Residents with any TRA codes in a 3-day period LOWER BOUND ESTIMATE:[2] 63.3 % with any teaching: 46.8 % with any research: 3.8 % with any patient-related administration: 31.6 % with any management/ administration: 25.3	% Physicians with any TRA codes in a 3-day period LOWER BOUND ESTIMATE:[2] 66.0 ns % with any teaching: 26.6 % with any research: 9.5 % with any patient-related administration: 44.8 % with any management/ administration: 35.9	N/A
2) PERCENT OF TIME IN TEACHING, RESEARCH, AND ADMINISTRATION	N/A	% Time in:[2] Teaching 6.8 Research 1.1 Patient care administration 2.3 Management 3.8 Total TRA 13.0 Direct Patient Care 72.7	% Time in:[2] Teaching 3.8 Research 1.3 Patient care administration 2.6 Management 3.8 Total TRA 10.9 ns Direct Patient Care 73.1 ns	Hours per week in TRA. N/A Hours per week in DPC 29.0
3) PHYSICIANS WITH MAJOR TEACHING, RESEARCH, AND ADMINISTRATION:	N/A	% Residents with major TRA training:[3] 8.3%	% Physicians with full-time TRA responsibility:[4] 4.0%	% FTE's for full-time TRA:[5] 5.9%

See Reverse Side for Footnotes and Legend.

FOOTNOTES:

[1]Taken from the ACGME questionnaire (p 14):
A. List not more than 10 major research projects being conducted in the program by members of the staff and indicate with an asterisk those projects in which residents are participating.

Programs with "some research" were those which indicated resident participation in at least one project.

[2]Taken from the Activity Overview section of the USC survey instrument.

[3]Taken from the Activity Overview section. Defined as any resident spending at least one-third of his professional time in teaching, research, or administration activities.

[4]Taken from the Major Professional Activity variable from the AMA Masterfile among physicians responding to the USC practice profile survey.

[5]Taken from Table 13 (p 32) OGME, Physician Requirements - 1990 for Obstetrics/Gynecology.

LEGEND:

ns = No significant difference found

Row 3 of Table 18 shows requirements for full-time equivalents in TRA. Although GMENAC projects a need for almost 6% full-time physicians in teaching, research and administration, data indicate that only 4% of OB/GYN specialists fill this role currently. One panelist felt that the 6% requirement projected by GMENAC was high because it failed to take into account the significant TRA component provided by physicians engaged in direct patient care. The GMENAC projection, however, is based on FTEs (and so takes into account the part-time teaching, research, and administrative activities of DPC physicians) and not on the number of full-time physicians engaged in teaching, research or administration.

4. Use of Nonphysician Providers in Obstetrics/Gynecology

Table 19 presents summary statistics concerning the use of nonphysician providers for OB/GYN. As indicated in Row 1, when all allied health providers are examined, similar NPP-to-physician ratios were found for the residents and physicians sampled in the USC survey: for both, there appear to be, on average, two allied health providers for every resident or physician.

When nontraditional NPPs are isolated, the USC data show a high ratio of such personnel for both residents and physicians, higher in fact than that projected for 1990. The number of nontraditional NPPs in the USC data appears to be inflated, however, by a tendency for physicians to report many traditional types of aides as formally trained physician's assistants. Estimates of the current supply of nontraditional NPPs indicate the current NPP-to-physician ratio in OB/GYN to be more on the order of ten physicians for every NPP. (Volume VI, Nonphysician Health Care Provider Technical Panel Report, p. 26).

Because of this bias, the percentage of practices with nontraditional NPPs, shown in Row 2 for the USC resident and physician sample, is also likely to be inflated. The ACGME data indicate that 25% of the programs have nontraditional NPP trainees. This agrees with figures provided by Eskew and Watt (1981) who found that 19% of the residents had nurse midwives in their programs and 29% had nurse clinicians. Panelists, however, questioned both sets of figures and judged them to be too high given the current numbers being trained. Given the available data, then, it is unclear exactly how much and what types of exposure residents have to nontraditional NPPs during training.

TABLE 19

OBSTETRICS/GYNECOLOGY

USE OF NONPHYSICIAN PROVIDERS:
COMPARISON OF GRADUATE MEDICAL EDUCATION, CURRENT PRACTICE, AND 1990 NORMATIVE PRACTICE

INDICATOR	GRADUATE MEDICAL EDUCATION	RESIDENT SAMPLE (n=79)	1976 PRACTICE PHYSICIAN SAMPLE (n=804)	1990 NORMATIVE GMENAC
1) NPP TO PHYSICIAN RATIO:	NPP trainee to Resident ratio: All allied health health providers:[1] N/A Nontraditional health providers: *1:10*	NPP to Resident ratio: All allied health providers:[2] 1:2.3 Nontraditional health providers: 1:3.1	NPP to Physician ratio: All allied health providers:[2] 1:2.0 ns Nontraditional health providers:[2] 1:4.4 ns	Specialty specific NPP to Physician supply ratio: All allied health providers: N/A Nontraditional health providers:[3] 1:5.6
2) AVAILABILITY OF NPP's WITHIN THE PROGRAM/ PRACTICE:	% Residency programs with a nontraditional NPP trainee:[1] *25.0%*	% practices with a nontraditional NPP:[2] 22.2%	% practices with a nontraditional NPP:[2] 21.8% ns	N/A
3) PERCENT OF VISITS DELEGATED:	N/A	% of total practice visits to other staff only:[4] 18:0%	% of total practice visits to other staff only:[4] 9.7% **	% of total visits to OB/GYN team delegated NPP's.[5] 17.9% a % of obstetric visits *18.5%* % of other ambulatory visits *18.0%* % of deliveries *7.3%*
4) PERCENT OF ENCOUNTERS REFERRED TO NPP's:	N/A	% of encounters referred to nontraditional NPP's:[6] 0.1%	% of encounters referred to nontraditional NPP's:[6] 0.1%	N/A

See Reverse Side for Footnotes and Legend.

FOOTNOTES:

[1] Taken from p. 12 of the ACGME Questionnaire which asks for Non-OB/GYN trainees (including Family Practice residents, surgical residents, medical residents, pediatric residents, medical students, nurse midwives, nurse practitioners, other) assigned to the program. The number of OB/GYN residents in the program was divided by the number of nurse midwives and nurse practicioner trainees to obtain the indicated ratio.

[2] Taken from Item G of the Questionnaire section of the USC survey instrument. Total FTEs for nonphysician providers in the practice was divided by total FTEs for physicians in the practice. The only categories of nontraditional NPPs available were Medex, Nurse Practitioners, and Physician's Assistants. Nurse midwives were not explicitly included.

[3] Taken from Table 5 (p. 29) the the GMENAC report, Volume VI: Nonphysician Health Provider Technical Panel which shows an active supply of 6100 physician extenders (2800 Nurse midwives, 2900 OB/GYN nurse practitioners, and 400 physician's assistants) projected for 1990 compared to a projected supply of 34,450 OB/GYN physicians.

[4] Taken from the Week's Practice Summary. Calculated as the percentage of vists to "Other Staff Only" over total visits to the practice (i.e., physician's vists plus staff visits).

[5] Taken from Tables 18, 21, and 22 of OGME, Physician Requirements - 1990 for Obstetrics/Gynecology which shows the following projected delegation patterns

	delegated	nondelegated
Ambulatory gynecological care (see footnote a/, Table 18 which readjusts delegation to 18%)	7,539,243	34,345,328
Obstetric Care (values per 100,000 in Tables 21 and 22 have been multiplied by 950.02 to project for total population)		
deliveries	197,604	2,509,951
visits	7,028,240	30,878,468
	14,765,087	67,733,747

[6] Taken from the Patient Encounter section of the USC instrument using code 8 (Physician extender) from the item "Referral/Consultation"

LEGEND:

** = Significant difference (.01 level) between resident and physician sample

a = Significant difference (.01 level) between physician sample and GMENAC

ns = No significant difference found

With respect to the percentage of delegated visits, residents appear to delegate approximately 18% of their visits and practicing physicians 9.7% even though the personnel available to each (as shown in Row 1) is equal. The 1990 normative projections show approximately 18% of visits delegated. Thus, it appears that delegation levels among residents more closely approximate 1990 normative practice than current practice.

Panelists indicated disagreement with the high delegation rates projected by GMENAC for 1990. Much of the care delegated in the GMENAC model must be performed by the more highly trained nontraditional type nonphysician provider, of which the supply projected by the GMENAC Nonphysician Provider Panel was considered to be inadequate to support the projected delegation levels. In addition, the physician oversupply predicted for 1990 is expected to create reverse pressures on delegation in as much as physicians will tend to maintain their own productivity levels with a dwindling supply of patients at the expense of patients seen by their staffs. Finally, it was noted that delegation depends on the physician attitudes as well as NPP availability. Thus, even with an adequate supply of NPPs, it is difficult to predict how much or in what capacity future physicians will utilize such personnel.

CHAPTER 4

CONCLUSIONS

Given that time available for graduate medical training is finite, the central issue in the design of training programs is how to allocate residents' experiences over that time so that maximum benefit is obtained. Clearly -- at the most fundamental level -- training should bear a relationship to subsequent practice. That is, residents should be exposed to the same kinds of experiences that will be encountered in subsequent practices. The data analyzed in this study overwhelmingly showed this to be the case. With few exceptions, the profiles of residents and practicing physicians in all three specialties were markedly similar. This was the case for each of the dimensions examined in the study, including the diagnostic and procedural focus of care, the ambulatory versus inpatient emphasis, time spent in teaching, research, and administration, and the use of nonphysician providers. Residents basically appear to do the same kinds of things in training that they will do in subsequent practice.

Although a high degree of correspondence between training and subsequent practice is desirable, absolute correspondence is not. The development of competency may require far more experience in an area than will typically be found in actual practice. Residents should, therefore, receive more exposure to complex conditions and less exposure to simpler conditions relative to practicing physicians. Several examples of this phenomenon were evident in the data. The proportion of time spent in obstetric care during residency training in Family Practice, in oncology and surgery in Obstetrics/Gynecology and in the treatment of nonpsychiatric medical conditions in Psychiatry markedly exceeded the time spent by practicing physicians, whereas for other types of care (e.g., the delivery of well care in OB/GYN) more time was spent in practice than in training. Panelists stressed the positive nature of these differences, noting that what is required of graduate medical education is evidence that certain critical levels of experience have been obtained in an area. In some cases the

amount of exposure during graduate medical education, even when greater than subsequent practice, may not be sufficient to ensure adequate training. Surgical training in Obstetrics/Gynecology was one such area where the optimum levels of training are conceivably higher than those evident at the present time.

Despite the overall convergence, several trends were noted that appear to represent real or possible divergence between present training and current practice demands. These include:

- the need to train full-time teaching faculty in Family Practice
- the need to ensure sufficient surgical experience in Obstetrics/Gynecology
- the need for more research faculty in Psychiatry
- the need in Psychiatry for formally structured training in child and adolescent psychiatric conditions
- the need for more training in reproductive endocrinology, infertility, and genetics in Obstetrics/Gynecology

There appear to be a number of factors responsible for such differences, some internal and some external to the specialty itself. Dislocations tend to arise in areas where new needs have just recently been recognized. This may be due to changes in the population or social environment or due to technological changes which have expanded the populations that may be benefited by treatment. The area of endocrinology/infertility in Obstetrics/Gynecology is one in which the base of knowledge and the population that may be served are both expanding, creating a need for more training than previously was sufficient.

Although no clearcut deficits were noted in the present study, Geriatrics is another area of potential concern in this regard. With the aging of the population, the growing need (cutting across specialties) for training in this field is obvious. Graduate medical education appears to be responding to this need, however, although the adequacy of the response has yet to be evaluated. It is clear that the experience should be an organized and integrated one, but it is not clear just how formally the experience should be structured.

Panelists felt that the need for a separate specialty had not yet been established, although the issue did require on-going monitoring.

In general, the response of graduate medical education to new developments has historically been quite rapid. The GME response in Psychiatry to recent advances in biology and the understanding of major mental disorders was already reflected in the data. These showed Psychiatry residents to be closer to projected 1990 patterns of care in terms of concentration on psychoses than was found among practicing physicians. In addition, a significant biological/medical component was found in the experiences of Psychiatry residents.

The general responsiveness of GME to new content areas was applauded by panelists, but was also felt to pose certain dangers. Over-accommodation can threaten the integrity of the graduate medical education program as a whole. New topics, therefore, need to be introduced in an integrated way. Historically, new areas tend to be introduced informally -- through conferences, seminars and so forth -- before they are made a formal part of the curriculum. This gradualism generally provides a non-disruptive mechanism for change.

In addition to the above discussed dislocations caused by evolving trends in medical care, other dislocations appear to be created by scarcities and constraints of various types. The ability to train enough teaching and research faculty -- which now poses problems for Family Practice and Psychiatry and threatens other specialties as well -- has been exacerbated by diminished funding for these activities (although the problem in Psychiatry is also one of a historical lack of emphasis on clinical research). Similarly, surgical training in Obstetrics and Gynecology is also jeopardized by reimbursement mechanisms which have shifted the supply of patients from university-based teaching hospitals to community medical centers.

Dislocations between graduate medical education and subsequent practice may be created by an even more complex web of factors -- some of them organizational factors within the specialty, others reflecting broader social concerns. The issue of child and adolescent psychiatric care is one example. The psychiatric treatment of children and adolescents in current practice does not appear to

approach the experience provided in training (or that projected for 1990 by GMENAC). This discrepancy was felt to reflect an essential lack of social recognition of and commitment to the care of child and adolescent psychiatric conditions. It was suggested, however, that supply problems in Psychiatry -- notably the unavailability of academic specialists in Child Psychiatry -- contributed to the medical and subsequent societal neglect of the problem.

Although the study identified some possible discrepancies between residency training and the needs of current practice, most of the dissimilarities were found between GME or current practice, on the one hand, and 1990 normative practice profiles, on the other hand. While some of these differences were artifactual -- being based on assumptions that have not been realized (e.g., increased delegation to NPPs in OB/GYN) -- panelists nevertheless saw the greatest challenge in GME not to be preparing residents for existing practice patterns, but for future patterns of care. These factors that may alter practice demands significantly in 1990 are many and include, not only technological advances, but changes in patient care methodologies, the health care delivery system, and society and the population as a whole.

A number of these changing conditions can be identified already, although their effects are as yet difficult to predict. Medical technology can, of course, be expected to advance in many, as yet unidentified areas. Health care delivery patterns are also evolving. The most noticeable trends have been the increased interdependence among health care professionals, both between physician and nonphysician providers and between generalist and specialist physicians. Adequate preparation in shared competence is, therefore, an area of concern in GME. New reimbursement mechanisms are being introduced for the express purpose of changing patterns of care -- toward less costly settings, less costly providers, and less costly modes of treatment. Competition among health care providers -- both among physicians (particularly in metropolitan areas) and between physicians and nonphysician providers -- may also alter the services and patient populations treated in any given specialty. Other factors which will undoubtedly influence practice patterns in 1990 are changes in the life-styles of physicians themselves (e.g., lower per physician productivity because of increased demand for leisure time or the increased number of women physicians who may combine part-time practice with child-rearing) and the

demands of a more educated, health conscious group of consumers (e.g., for more preventive care).

These are just a handful of the factors which may change practice profiles in the future and which, therefore, create new requirements to be met by graduate medical training. Given the rapidly changing environment, these factors are difficult to identify and their effects difficult to predict, making it doubly difficult to anticipate them in current training regimens. In general, training programs were felt to have little control over the broader socioeconomic changes . Whether graduate medical education is currently meeting the challenge of preparing residents to respond to future technologies was of more concern. To prepare physicians to operate in the future as well as the present environment, training should reflect the cutting edge of new technological developments and new patient care methodologies. The educational objectives of GME curricula are, of course, continually revised to incorporate new content areas. To some degree, however, panelists felt the profiles of residents and physicians displayed too much similarity and failed to reflect particularly innovative trends in the training of residents.

Graduate medical education, therefore, faces a challenge and must do so under a number of existing (and perhaps growing) constraints. Some of these have been noted previously and include changes in funding and reimbursement which have decreased the resources committed to training in teaching and research. In addition, the supply of patients available to university-based institutions is being threatened by a variety of factors, including the improving health status of the population, reimbursement patterns which are shifting patients to community health centers, and competition for patients by practicing physicians. The teaching of residents is thus taking place increasingly in community health centers outside the academic centers of technological advancement. These factors make it difficult to integrate all the necessary skill areas and, in particular, to ensure that the state-of-the-art in medical practice is represented in training. This challenge to GME may require upgrading the technological content of training which takes place outside academic centers, as well as developing new teaching models which make best use of limited training resources (as well as the limited time of residents). GME has only scratched the surface in this endeavor, and many potentials for

breakthroughs exist. The implications of the new computer-aided learning and information processing technologies need to be explored in this regard.

Perhaps the greatest constraint faced by graduate medical education is the fact of its limited influence, in that it has no control over what comes before, or what follows. Given that physicians will continually be confronted with technologic innovations after residency training, GME should provide competency not only in specific content areas, but in problem-solving and self-learning skills as well. In addition, once in practice, there are a myriad of factors that may cause practice patterns to diverge from those found in training. When there is a fair amount of diversity in a specialty, as in the delivery of obstetric care in Family Practice or as in the chosen setting of care in Psychiatry, GME faces an even greater challenge in the preparation of physicians for practice in terms of the optimum allocation of experiences. The continuing medical education profile of physicians may become more relevant than the graduate medical education profile in assessing the adequacy of preparation in various skill areas. This factor and the expanding informational burden being placed on physicians, argues for a more integrated approach to medical education as a whole, from pre-med and medical school, through graduate medical education to continuing education. One panelist felt, in particular, that graduate medical education and continuing medical education should move closer together both conceptually and administratively so that the education of physicians becomes the joint responsibility of CME offices and GME programs.

It is emphatically clear that -- in order to respond to a complex and rapidly changing environment -- more research is required in the area of graduate medical education. Only with continual monitoring may dislocations be detected as they arise. This research may be focused, for example, on specific issues such as training in endocrinology/infertility in OB/GYN or the provision of geriatric care across all specialties or it may concern broader structural and philosophical issues such as the development of new training models in graduate medical education. Regardless of the topic, some program of research is required and should be performed on an ongoing basis. One-shot studies of training in a specialty area do not provide the information necessary for the fine-tuning of a training program.

Several components that were not available in the present study are needed for such a program of research. The first is the ability to examine the qualitative aspects of training, rather than simply the levels of experience obtained. Although the amount of exposure in an area provides some information about the adequacy of training, this information cannot indicate whether the relevant experiences are being acquired. With respect to geriatric care and child psychiatric care, for example, the present study indicated that the levels of exposure were adequate but it was unclear whether the experiences provided were organized and coordinated ones.

The other research requirement recognized by the panel was the need to assess the quality of residency training by examining outcome. Outcome should be broadly defined and assessed both from the standpoint of the physician -- as indicated by such factors as board certification, licensure, continuing medical education -- and from the standpoint of the patient, through an examination of health outcome, patient satisfaction, the meeting of community needs, and so forth.

Although the number of research areas is large, some potentially profitable research priorities were identified. Data on the use of these professionals was particularly limited in this study. Given the potential impact these providers may have on the future practice profiles of physicians, it is important to examine the kinds of exposure physicians receive in the use of nonphysician providers. If the delegation projected by GMENAC for 1990 fails to occur, for example, this may be due to supply limitations, or it may be due to the continued unwillingness of physicians to use nonphysician providers in nontraditional ways. Other research suggestions arising from the present study pointed to the need for further research on training in genetics, as well as reproductive endocrinology and infertility in Obstetrics/Gynecology. In addition, as noted, training in geriatrics requires further monitoring, especially in the relatively neglected area of early geriatrics. The heterogeneity in Family Practice with regard to obstetric care may deserve further attention, although intensive study was not felt to be required. It was also noted that changing mores have created new demands for training in adolescent pregnancy and sexuality in Obstetrics/Gynecology and that this area may require further study. In Psychiatry one crucial area of study was felt to

be the skill differences between psychiatrists and other mental health professionals, and the particular training required to develop the unique aspects of specialist Psychiatric care as opposed to the care delivered by other providers. The integration of the most recent advances in biological knowledge into training was also felt to warrant further study.

The diversity of such topics illustrates that research needs in GME involve not so much defining a series of specific studies that should be performed, but establishing an ongoing program of research that is responsive to issues as they arise. Because of the need for timely information, massive time and motion studies such as the USC Practice Profile may not provide the most appropriate research model. Although these studies allow precise quantification of the content of training and/or practice, their cost and lengthy turnaround time make them more useful in providing baseline description than for use as decision-making tools. Less costly, but more frequent surveys -- relying to a greater degree on subjective assessments of practice and training content by medical educators, residents, and practicing physicians -- may be needed to provide the information necessary to evaluate and modify curricula in graduate medical education.

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